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Maintenance

**MAINTENANCE MANAGEMENT OF
AEROSPACE EQUIPMENT**

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This instruction implements AFD 21-1, *Managing Aerospace Equipment Maintenance*, and prescribes procedures for managing the maintenance complex. It establishes the AETC maintenance management system for AETC units (military, civil service, and contract) that perform on-equipment and off-equipment maintenance on aircraft, aircraft trainers, and support equipment. This instruction does not apply to Air Force Reserve Command or Air National Guard units. It describes group commander responsibilities and group management and staff duties and responsibilities. It also identifies the specific maintenance production functions and their responsibilities, and it outlines the AETC quality maintenance program. It establishes broad maintenance management programs applicable to all aircraft and training device maintenance. These programs are the management tools used by the staff and production functions to accomplish maintenance requirements. (See **Attachment 1** for a glossary of references and supporting information applicable to this instruction.)

Subordinate units will coordinate and provide copies of supplements to this instruction. (**NOTE:** This requirement is not required for local maintenance operating instructions [MOI]). Recommendations for changes, improvements, or waivers to this instruction should be annotated on AETC Form 1236, **Request for Improving/Changing AETC Maintenance Regulations/Instructions** (paragraph 4.8.). Requests must be approved by the appropriate group commander (or squadron commander, if not assigned to a group) before they are sent to HQ AETC/LGMMP, 555 E Street East, Randolph AFB TX 78150-4440, for action by HQ AETC/LGM.

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SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

It incorporates both previous volumes of AETCI 21-101 and recent changes to Air Force and AETC policy concerning the maintenance and management of aerospace equipment; includes all waivers, message policy changes, and clarification guidance issued since the last publication date; deletes material now included in supplements to technical orders (TO); restructures the quality assurance program (QAP); and deletes reference to AETC Form 759, **Maintenance Checklist**. (This form is now prescribed in the revision of TO 00-20-1/AETC Sup 1, *Aerospace Equipment Maintenance General Policies and Procedures*.) This instruction also deletes munitions management guidance formerly in Chapter 22 of Volume 2 of this instruction. (This information is projected to be included in AFI 21-201/AETC Sup 1, *Management and Maintenance of Non-Nuclear Munitions*, when published.) A bar (|) indicates a major revision from the previous edition of this publication.

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PART 1**PRODUCTION FUNCTIONS****Chapter 1****MANAGEMENT OF PRODUCTION*****Section 1A—Maintenance Management and the Commander***

1.1. AETC Maintenance Concept. The command concept is to achieve high mission capability at an acceptable cost. AETC uses a mixture of varied levels of maintenance; specifically, three-level, two-level, and contractor logistics support (CLS) maintenance as follows:

1.1.1. Three-Level Maintenance. Three-level maintenance is either organizational (on equipment), intermediate (off equipment), or depot level.

1.1.1.1. Organizational-level maintenance consists of all flight line functions.

1.1.1.2. Intermediate-level consists of off-equipment bench check, repair, and reprogramming including avionics, jet engine intermediate maintenance (JEIM), trim pad or hush house, sensor (low altitude navigation and targeting infrared systems for night [LANTIRN]), precision measurement equipment laboratory (PMEL), electro-environmental, electronic countermeasures (ECM) pod, egress, fuel system, machine, welding, structural repair, corrosion control, wheel and tire, joint oil analysis program (JOAP), nondestructive inspection (NDI), inspections (periodic, phase, and isochronal), armament, munitions, aerospace ground equipment (AGE), pneudraulics, survival equipment, and aero-repair capability.

1.1.1.3. Depot-level maintenance includes component and equipment repair beyond the scope of organizational or intermediate level maintenance.

1.1.2. Two-Level Maintenance (2LM). Under the 2LM concept, select avionics components and engines for certain aircraft are no longer repaired at the intermediate level, but sent straight to the depot for repair after a screening process verifies the component or engine is unserviceable.

1.1.3. Contractor Logistics Support (CLS). CLS does not refer to either a type or level of maintenance, but to a source. CLS is a form of two-level maintenance, consisting of contractor support and depot support. Full CLS means a contractor performs all on- and off-equipment work and serves as the source of supply for a given weapon system. In a partial CLS arrangement (such as that used on T-1, T-6, and T-43 aircraft), the contractor serves as a source of supply and off-equipment component repair for weapon system components.

1.2. Maintenance Organizations. Types of AETC maintenance organizations include full contractor, partial contractor, full civil service, and military and/or civil service units. Contractor and civil service maintenance functions will be assigned to an organization as a unified function, as determined by the wing commander (that is, assigned under the wing or group commander). Specifics of the different types of maintenance organizations are as follows:

1.2.1. Military or Military-Civil Service Mix. This type of organization uses the objective wing concept--aligning most on-equipment maintenance within the operations group and off-equipment

maintenance within the logistics group. This category is governed by AFI 21-101, *Maintenance Management of Aircraft*; AFI 38-101, *Air Force Organization*; and this instruction. In letter or message format, address variance requests through HQ AETC/LGMMP to the approved maintenance organizational structures prescribed in the above publications. Directorate of logistics-approved variance requests to Air Force guidance will then be forwarded to HQ AETC/XPM and HQ USAF/PE for final determination (AFI 38-101, Chapter 5).

1.2.2. Contractor. (This organization encompasses all types of contractors, including CLS.) In the competitive sourcing process, each prospective contractor submits an organizational structure as part of the formal proposal. The logic and theoretical effectiveness of this organization are judged and scored by the source selection evaluation team as one of several factors used to select the successful bidder. When the contract is awarded, the organization specified in the winning proposal becomes the baseline. Unless a change is approved, the winning contractor is expected to implement the organizational structure as proposed.

1.2.3. Civil Service. As with a contractor organization, a purely civil service organization is created in response to a request for proposal (RFP). Therefore, the most efficient organization (MEO) specified in the proposal becomes the baseline. MEOs are the result of the government bid being selected during competitive sourcing or, in some cases, direct conversion. Further information can be found in AFI 38-203, *Commercial Activities Program*; and OMB Circular A-76, *Performance of Commercial Activities*.

1.3. Maintenance Process:

1.3.1. Preventative Versus Corrective. The purpose of the entire maintenance process is to sustain a capability to support the flying and training missions. To accomplish this objective, the primary focus of the effort should be on preventive--rather than corrective--maintenance. Preventive (or scheduled) maintenance ensures equipment is ready and available at the time of need. On the other hand, corrective (or unscheduled) maintenance is generated during the process of using equipment.

1.3.2. On-Equipment and Off-Equipment. There are two basic types of maintenance performed at unit level; on-equipment and off-equipment. As the name implies, on-equipment is work performed on an aircraft or piece of support equipment. Off-equipment work is typically performed in a repair shop on components removed during on-equipment maintenance. Either type of work can be scheduled or unscheduled. Components removed from equipment for in-shop repair are said to be in the repair cycle. Like preventive maintenance, effective repair cycle management is critical to sustaining maintenance capability. Attention must be paid to eliminating bottlenecks (by ensuring adequate parts, equipment, and training are available) and otherwise minimizing the time from when the component is removed from an end item to when the component is returned in serviceable condition.

1.4. Maintenance Quality. Maintenance discipline is the major challenge to quality maintenance. Commanders have the responsibility to train their leaders to know what they require from maintenance and to communicate it unmistakably and consistently to their maintainers in word and action.

1.4.1. Maintenance discipline and integrity are the internalized values that make supervisors check their technicians' work instead of relying strictly on quality evaluators. Supervisors must make technicians go "by the book," even when they are pressed for time, weather conditions are miserable, or they think they already have the job memorized.

1.4.2. Commanders and maintenance supervisors at all levels must continue to enforce technical order (TO) discipline. Nothing less than 100 percent commitment to line-by-line, step-by-step use of the technical data during maintenance is acceptable. Leadership must not settle for halfway measures such as "technical data not readily available" or encourage an attitude that technical data is only for people who are not technically proficient or not experts in their field. Hands-on, step-by-step use of TOs is the only real control leaders have over the quality of troubleshooting and repair technicians provide.

1.5. Programmatic Management:

1.5.1. The programmatic approach establishes a direct and measurable relationship between resource input and mission output. This method requires a complete analysis of objectives and requirements, development of proactive plans leading to specific results, determination of the most efficient methods to arrive at those results, and strict adherence to the plan until desired results are achieved. Results (output) must be measurable by a quantifiable unit of output.

1.5.2. In AETC, this programmatic approach to planning and management is used to evaluate the effectiveness and efficiency of current year operations, and it forms the basis for calculating future resource requirements. AETC allocates resources across the command at a constant ratio based on the type of mission. Commanders of like units are allocated resources in a like manner and are held accountable to the same levels of performance.

1.6. Managing Funds. Maintenance in general and aircraft maintenance in particular consume large amounts of operating funds. AETC allocates funds to like units on an equal basis, allocates all funds at the beginning of the fiscal year, and holds commanders responsible for operating within their budgets. The major categories of money are operations and maintenance (O&M) and equipment.

1.6.1. O&M money is used to buy supplies, tools, ground fuels, and spare parts and to pay for temporary duties. Effective management of this money has become much more critical with the decentralization of items like depot-level reparable (DLR) parts and aviation petroleum, oils, and lubricants (POL). For example, in DLR the field pays exchange price for every DLR item issued from supply and will only be reimbursed if the item is repaired and returned to supply. O&M funds are distributed equally based on mission or type of equipment. For example, aircraft flying hours are funded equally, based on aircraft mission design series (MDS).

1.6.2. O&M money is also allocated for service contracts. Maintenance contracts are normally funded at the target price level. The target price is the sum of contract target cost (optimum) plus the incentive fee. Contracts operating above target price are said to be in an "overrun" condition. The government is liable for a percentage of the overrun up to a level called the ceiling price. Likewise, a contract operating at less than target price is said to be in an underrun condition in which case the government recoups a percentage of the underrun. Funding an overrun is the responsibility of the commander unless the condition generating the overrun is AETC directed. However, money resulting from an underrun is available for the commander's discretionary use. Civilian pay money is allocated on the basis of the current year budget guidance so the rules may vary from year to year. The main point is that the amount of money allocated is finite and must be managed as such.

1.6.3. Equipment money is authorized for the purchase of specific, large-equipment items. These purchases must be planned well in advance and forecasted in the unit input to the program objective memorandum (POM). Commanders should regularly review expenditure measures of output, such as

O&M cost per flying hour, O&M quarterly versus planned obligation, O&M average daily expenditures, contract cost per flying hour, analysis of overruns and underruns, percent base repair, and reasons a reparable asset was not repaired. **NOTE:** Aircraft maintenance contracts normally have an award fee feature, and the wing commander is the "fee determining official." To avoid a conflict of interest, award fee money is withheld and distributed by HQ AETC/FM on an as-required basis. For additional information on award fee management, see the functional director or commander.

Section 1B— Group Commander

1.7. Functions. The wing commander assigns maintenance responsibilities to the logistics (LG) and operations group (OG) commanders in units with military maintenance organizations.

1.7.1. The wing maintenance activity is organized under the objective wing concept. Maintenance functions are divided between on-equipment maintenance and off-equipment maintenance and will be organized consistent with guidance contained in AFI 38-101, organizational size, mission, responsibility, and workload.

1.7.2. Contractor and civil service maintenance functions are not required to organize as specified in this instruction. However, they will implement the organization proposed and accepted by the government during the source selection process by accomplishing all specific tasks and responsibilities enumerated in applicable Air Force and AETC instructions and maintaining the intent of this instruction. **NOTE:** This instruction is not applicable to contractor logistics support (CLS) maintenance units unless it is incorporated into applicable contract statements of work. These units will continue to be governed by the provisions within their applicable contract statement of work (SOW).

1.8. Management Responsibilities. The OG commander, LG commander, or civilian maintenance authority (MA) will manage assigned maintenance activities according to this instruction. (**NOTE:** For the purpose of this instruction, in units where there is not an OG or LG responsible for maintenance, the applicable group commander or director of maintenance [DOM] will be the MA [as depicted by the wing's organizational structure] and will ensure compliance with all responsibilities in this instruction. Also, in units with blue-suit aircraft maintenance activities, the deputy operations group commander for maintenance [DOGM] and maintenance superintendent [MS] report directly to the OG commander and are delegated all OG commander responsibilities for aircraft maintenance.) The MA responsibilities will include, but are not limited to:

1.8.1. (*OG, LG, or MA*) Ensuring necessary safety programs are established in maintenance.

1.8.2. (*OG, LG, or MA*) Establishing a utilities conservation program.

1.8.3. (*OG, LG, or MA*) Ensuring sufficient personnel, including training detachment (TD) or logistics training (LTF) instructors, are qualified and authorized to clear Red-X conditions.

1.8.4. (*OG or LG*) Ensuring the group O&M budget is properly managed.

1.8.5. (*OG, LG, or MA*) Developing effective local foreign object damage (FOD) and dropped-object prevention programs (AFI 21-101) and appointing group points of contact for these programs (**Chapter 14**).

1.8.6. (*OG, LG, or MA*) Establishing the following programs (as applicable): conservation, security, awards and decorations, equal opportunity, trainer development, Queen Bee, contract maintenance,

equipment prototyping, instrument flight simulators, international training, pollution prevention, and affirmative procurement.

1.8.7. *(OG, LG, or MA)* Establishing an aircraft and equipment impoundment program for the aircraft and equipment within his or her control according to AFI 21-101.

1.8.8. *(OG, LG, or MA)* Ensuring an effective aircraft structural integrity program (ASIP) is established (AFI 63-1001, *Aircraft Structural Integrity Program*, and AFI 21-101) and appointing an officer or senior noncommissioned officer (SNCO) as the program manager.

1.8.9. *(LG or MA)* Ensuring effective training programs are established and conducted for maintenance (AFI 21-101).

1.8.10. *(OG, LG, or MA)* Ensuring compliance with Air Force civilian personnel 36-series (formerly 40-series) publications pertaining to promotion, training, and testing of civil service employees.

1.8.11. *(OG, LG, or MA)* Ensuring the management of hazardous material is in compliance with federal and applicable state and local laws and Air Force publications (AFI 32-4002, *Hazardous Material Emergency Planning and Response Program*, and AFI 32-7042, *Solid and Hazardous Waste Compliance*; and AFOSH Standard 161-21, *Hazard Communication*). Ensuring initial awareness training is accomplished according to AFI 32-7080, *Pollution Prevention Program*. Appointing an environmental coordinator in LG and OG to ensure compliance with wing environmental programs and participate in applicable environmental planning meetings.

1.8.12. *(OG, LG, or MA)* Reviewing scheduled flying requirements (**Chapter 5**) to ensure they are consistent with maintenance capability.

1.8.13. *(OG and LG or MA)* Establishing an effective group quality maintenance program (**Chapter 4**).

1.8.14. *(OG or MA)* Establishing procedures to identify repeat, recurring, and cannot duplicate (CND) discrepancies that impair mission performance or affect safety and establishing procedures to review corrective actions to these discrepancies.

1.8.15. *(LG or MA)* Ensuring maximum repair cycle responsiveness and overall self-sufficiency (**Chapter 18**). Implementing and supporting the reliability and maintainability (R&M) product improvement program (PIP) (**Chapter 20**).

1.8.16. *(OG, LG, or MA)* Establishing an effective combat sortie generation program as outlined in **Chapter 22** and **Chapter 23**, where applicable. Ensuring compliance with established combat sortie generation training requirements.

1.8.17. *(LG or MA)* Operating and maintaining a hazardous material pharmacy according to AFI 32-7086, *Hazardous Materials Management*, and its AETC Sup 1 (as applicable). **NOTE:** Local instructions may specify operation by another base agency such as civil engineering (CE).

1.9. Maintenance Operating Instructions (MOI), Unit or Installation Instructions, and Contractor Regulations (CR):

1.9.1. The OG or LG will publish MOIs, unit instructions, or installation instructions, as applicable, of an administrative or procedural nature that pertain solely to maintenance. (A directive that applies to both OG and LG will be published as a unit, base, or wing instruction or other standard publica-

tion.) MOIs, unit instructions, or installation instructions will not be published to change or supplement TOs.

1.9.2. CRs are administrative or procedural in nature and apply solely to the maintenance complex. They will not be published to change or supplement TOs. CRs must be forwarded to the chief quality assurance evaluator (QAE), functional director or commander, and administrative contracting officer (ACO) for review and acceptance prior to publication. **NOTE:** A publication that applies *outside* the maintenance complex is published as a unit instruction.

1.9.3. An MOI or wing instruction that affects munitions operations or munitions safety must be reviewed by base safety and munitions functions. An MOI or wing instruction that addresses hazardous material must be coordinated with base environmental activities (civil engineering environmental engineering flight, bioenvironmental engineering, and hazardous material pharmacy).

1.10. Munitions and Weapons Activities:

1.10.1. The OG, LG, or MA will provide the necessary management attention and support to assigned munitions and weapons activities.

1.10.2. *(Luke and Tyndall AFBs only)* HQ AETC/LGMW provides each base a unit-committed munitions list (UCML) based on plans and munitions availability. Published according to AFI 21-101, the UCML is a list of primary, support, and limited-use munitions necessary to meet unit operational and training requirements. The development and distribution of the UCML is a coordinated effort between HQ AETC/LGM and 19 AF/DOK. HQ AETC/LGMW will review each unit UCML annually to determine if changes are required. Units must notify HQ AETC/LGMW of any significant mission, contingency tasking, or munitions changes that may affect the UCML.

1.10.2.1. *(Luke and Tyndall AFBs only)* The list of primary munitions (PM) in the UCML cannot include more than eight individual munitions or munitions family groups (MFG) combined. A list of limited-use munitions may be developed at numbered Air Force (NAF) or unit level. Units may request changes to these lists. Process justified requests through the applicable group commander prior to sending them to HQ AETC/LGMW.

1.10.2.2. *(Luke and Tyndall AFBs only)* Each unit will develop an appendix to the UCML which will contain the conventional PM and support munitions (SM) configurations to support load crew training, munitions mobility training programs, and PM configurations for integrated combat turnaround (ICT) training. Configurations will be consistent with the aircraft design operations capability statement and operational taskings. The appendix will also identify the number of load crews and non-load crew personnel (by position) that each squadron must plan to qualify on ICTs for an actual or potential contingency (**Chapter 22** and **Chapter 23**). The appendix will be jointly developed by the wing weapons manager and wing weapons and tactics, coordinated with the OG and LG commanders, approved by the wing commander, and then submitted by memorandum to HQ AETC/LGMW within 30 days after receipt of the UCML.

1.10.3. *(Luke and Tyndall AFBs only)* The OG commander will appoint the senior 2W1XX as the wing weapons manager. The wing weapons manager is assigned to the OG commander's staff and is the functional manager for all weapons-related matters in the wing. The wing weapons manager has the authority to cross group lines to accomplish responsibilities as the wing functional manager for AFSC 2W1 (**Chapter 23**).

1.10.4. Group commanders with munitions responsibilities will appoint munitions accountable systems officers (MASO) as required in AFI 21-201, *Inspection, Storage, and Maintenance of Non-Nuclear Munitions*, and AFI 23-111, *Management of Government Property in Possession of the Air Force*.

1.10.5. (*Luke and Tyndall AFBs only*) The LG commander will appoint the senior 2W0XX as the wing munitions manager. The munitions manager is the focal point for all munitions-related matters in the wing (AFI 21-201/AETC Sup 1, *Managing Aerospace Equipment Maintenance*). The munitions manager will maintain a close liaison will be maintained with the wing weapons manager on joint munitions and weapons issues and concerns.

1.10.6. War reserve material (WRM) missile or precision guided munitions (PGM) control requirements are prescribed in AFI 21-201.

1.10.7. LTFs will provide training on the requirements of TO 11A-1-33, *Handling and Maintenance of Explosives Loaded Aircraft*, for all personnel who are involved in explosives-loaded aircraft operations. Initial training will be provided before personnel work on explosives-loaded aircraft and annually thereafter. Every 2W0XX and 2W1XX person who has received weapons and explosives safety training from other sources (such as weapons academics or explosives safety training per AFI 91-202, *The US Air Force Mishap Prevention Program*) is exempt from this training.

1.11. Precision Measurement Equipment Laboratory (PMEL). When a PMEL is established, the LG will provide the necessary support. Customers may include host and tenant Air Force activities, other military services, federal agencies, contractors, and security assistance program countries with established support agreements. For guidance, see AFI 25-201, *Support Agreements Procedures*; AFI 99-101, *Developmental Test and Evaluation*; AFI 99-102, *Operational Test and Evaluation*; AFI 99-109, *Test Resource Planning*; and AFI 65-601, Volume 1, *Budget Guidance and Procedures*.

1.12. Trainer Support for Federal Stock Class (FSC) 69XX. The LG will provide support for training devices designed or manufactured by AETC for which AETC provides logistics support (**Chapter 24** and AETCI 21-109, *Maintenance Management Trainer--Development*).

1.13. Protection and Security of Aircraft, Aircraft Equipment, and Facilities. In conjunction with the security forces, the OG commander, LG commander, or MA will establish programs to ensure protection of assigned aircraft, equipment, and facilities. The maintenance operations center (MOC) is normally the focal point where production activities report broken locks, other suspicious events, and unauthorized personnel on flight lines or within shops.

1.14. Aircraft Protection During Severe Weather. The OG commander, LG commander, or MA must ensure a comprehensive plan is developed to support protection of aircraft and equipment during severe weather at the home station and forward operating locations. This plan will detail how, when, and who will receive warnings. It will also include detailed implementation actions once notification is received.

1.15. Repair Cycle Management. The OG commander, LG commander, or MA will ensure all avenues are exhausted (within group capabilities) before repair cycle assets are declared not reparable this station (NRTS) or condemned. Assets must be repaired at the lowest level capable of economic repair (**Chapter 18** and **Chapter 21**). The LG commander or MA will also ensure the repair cycle monitor (RCM) function adequately supports the repair cycle asset management system (RCAMS) (**Chapter 18**).

1.16. Emergency War Order (EWO) War Management (WM); Contingency, Dispersal, and Inspection; and Exercise Plans. A constant state of readiness is required to carry out the wing operations plan within the times specified by the plan. The OG commander, LG commander, or MA will ensure each tasked maintenance activity within his or her control:

- 1.16.1. Designates sufficient numbers of qualified maintenance personnel to meet commitments and ensures immunization and personnel affairs documents for unit personnel are kept current.
- 1.16.2. Identifies equipment and materials prescribed by the plan.
- 1.16.3. Sets up procedures to ensure prescribed marking, packaging, and marshaling requirements are done.
- 1.16.4. Notifies the appropriate command and control function of the start, progress, and completion of actions required by applicable checksheets and plan.
- 1.16.5. Informs the appropriate command and control function of conditions that disrupt execution of the plan and ensures flow plans are distributed as necessary.
- 1.16.6. Ensures support equipment (SE) included in war readiness or dispersal kits are inspected (TO 00-20-5, *Aerospace Vehicle/Equipment Inspection and Documentation*).

1.17. Historical Static Display Maintenance and Modification. The wing commander will assign a historical property custodian (HPC) to ensure proper preservation, inspection, and maintenance are done on all historic static display aerospace equipment (AFI 84-103, *Museum System*). The HPC will coordinate with wing maintenance activities to provide physical upkeep and repair as required. Historical static display equipment must not be allowed to deteriorate because of vandalism or lack of attention.

1.18. Automated Maintenance Management System (MMS):

- 1.18.1. Automated MMSs will help group commanders with the tasks of recordkeeping, reporting to higher headquarters, managing the repair cycle program, and performing other data transcription tasks that can be efficiently processed by a computer system.
- 1.18.2. The Core Automated Maintenance System (CAMS) link to the Standard Base Supply System (SBSS) computer provides the maintenance organization with the ability to requisition needed aircraft, equipment, and support system assets from tabletop terminals located throughout maintenance (**EXCEPTION:** The Contractor Operated and Maintained Base Supply (COMBS) System [[Chapter 17](#)]).
- 1.18.3. CAMS procedures will be input and processed in accordance with the applicable volume of AFCSM 21-556, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS (PA)*, *Introduction to CAMS, Users Manual*. Base-level users may recommend changes to CAMS by using AF Form 3215, **C-4 Systems Requirements Document**, and forwarding it to HQ AETC/LGX1. (**NOTE:** The term "automated maintenance management system" is used in place of the CAMS, CAMS for mobility [CAMSM] [G081], and process control equipment maintenance scheduling [PCEMS] program.) In cases where specific procedures are detailed using a specific automated maintenance management system (for example, CAMS) and a different assigned system (for example, G081) will not accomplish the specific task outlined in this instruction, local procedures will be prescribed in an MOI.

1.19. Contract Maintenance Procedures. When repair is authorized but is beyond base capability, the OG, LG, or MA may request contract maintenance support for the repair of assigned Air Force equipment. The appropriate group commander or MA will screen nearby military resources before submitting a request for contract services; that is, he or she will explore all other means to acquire the repair capability.

1.19.1. Maintenance will submit an annual contract maintenance fund forecast (derived from work center forecasts) through the budget manager at the beginning of each fiscal year (or more frequently if required). The annual forecast will be updated every 3 months.

1.19.2. When contract maintenance is necessary to repair a repair cycle item, the RCM function will initiate an AF Form 9, **Request for Purchase**. Use action taken code D when deferring an item to contract maintenance for repair. Update the CAMS database and annotate AFTO Form 350, **Repairable Item Processing Tag**, with deferred-to-contract maintenance.

1.19.3. Items removed due to a malfunction will carry the original event identification (EID) number throughout the repair cycle. The RCM function will assign an EID number for items that cannot be related to an end item or specific action. For suspense and control, the RCM function may use a separate register to record AF Form 9 actions. When maintenance is accomplished that requires historical documentation, record it according to applicable 00-20 TOs.

1.19.4. Contractors must report system and component failure when the data is essential to the materiel management of the item. This may be a local determination or one made jointly by HQ AETC and/or Headquarters, Air Force Materiel Command (HQ AFMC). Work center codes should be assigned to contractors to adequately identify and permit separation of contractor data as prescribed by TOs.

1.20. Communication Systems. These systems must permit rapid transmission of instructions or requests. They are used to transmit equipment and maintenance job status as well as requirements for parts, supplies, AGE, and specialists.

1.20.1. Land mobile radios may be used to expedite maintenance and supply requirements. The OG commander *and* LG commander or the MA will determine whether to use a two-, three-, or four-net system and will assign specific nets in a wing instruction or contractor regulation as applicable. The OG and LG commander or the MA will also establish local call signs to minimize congestion and maximize effective communication. General maintenance radio net criteria and authorization sources are as follows:

1.20.1.1. Initial radio operator training will be administered to personnel before they use the radio system.

1.20.1.2. Each radio net is authorized a base station. Allowance Standard (AS) 660 contains allowances for specific radios. All requests for intrabase radio equipment to support maintenance activities will be processed according to AFMAN 23-110, Volume 2, Part 2, *USAF Standard Base Supply System*.

1.20.2. An ultrahigh frequency (UHF) radio (fixed or mobile) is authorized to provide aircraft-to-maintenance communications so advance status information may be relayed by the aircrew to maintenance. The OG or MA will determine the location of this radio. Source code 660 AOOJ applies. Procedures for use of the UHF radio communications will be coordinated and agreed on by

operations and maintenance. Maintenance notification codes (**Chapter 15**) will be used for aircraft and weapons-to-maintenance communications.

1.20.3. Administrative telephone systems are authorized in the base communications-electronics support program document to fulfill routine requirements. Special maintenance needs for direct-line communication may require special equipment to be installed. Direct-line communication requirements are established on the following basis:

1.20.3.1. There must be a frequent and continuing need for phone communications between direct line terminal points. Where the same direct line terminates in more than one instrument on either end of the line, it is considered only one line.

1.20.3.2. Each aircraft MOC has a hotline on the secondary crash phone net and a hotline to munitions control and explosive ordinance disposal when assigned. Direct communications lines may also be used for specialist dispatch; petroleum, oil, and lubricants (POL); operations; fire station; and central security control (when security measures must be provided). When mission requirements dictate, a direct line to the control tower may be installed.

1.21. Recovery of Off-Station Cross-Country Aircraft:

1.21.1. If an AETC aircraft in undergraduate pilot training (UPT), specialized undergraduate pilot training (SUPT), pilot instructor training (PIT), undergraduate navigator training (UNT), or introduction to fighter fundamentals (IFF) becomes not mission capable (NMC) while off station (other than at an Air Force base that has the capability), the owning unit will be responsible for providing necessary support within a 300 statute mile radius of the owning unit. This can be determined by using a standard highway mileage guide (for example, Rand McNally).

1.21.2. Outside of a 300-mile radius, the AETC base closest to an off-station NMC aircraft (with maintenance capability for the specific MDS aircraft) will furnish all support, including personnel, equipment, components, and supplies necessary to repair the aircraft regardless of which unit possesses it. Following notification, units will dispatch required maintenance crews, supplies, TOs, and SE by the next normal duty day.

1.21.3. When multiple AETC aircraft require off-station support by a single base, priorities will be negotiated between the owning and supporting base to minimize negative mission impacts.

1.21.4. As a minimum, when AETC NMC off-station aircraft are within 300 miles of the supporting base, maintenance crews will be dispatched and will begin performing required maintenance on the aircraft not later than the beginning of the third duty day following the notification. For each additional 350 miles, or portions thereof, an additional duty travel day will be allowed. The owning and supporting base will reconcile unique requirements (transportation, cannibalization, budget, etc.). **NOTE:** All other AETC aircraft that do not fall in the categories above will follow the procedures outlined in TO 00-20-5.

1.21.5. If a unit deploys aircraft to another location for the purpose of flying sorties, the owning unit is responsible for recovering NMC aircraft at the deployed location.

1.22. Aircraft Restrictions. The following procedures apply to aircraft restricted as a result of an oil sample analysis or specific maintenance action:

1.22.1. When NDI laboratory personnel discover an oil sample with an erroneous or incomplete DD Form 2026, **Oil Analysis Request**, they will relay this information to the MOC or other appropriate activity for correction. When an aircraft requires a special oil sample, the owning maintenance activity will ground the aircraft and ensure a special sample is taken and updated in CAMS. The aircraft will remain grounded until the special sample has been analyzed. The OG or MA restricts AETC aircraft with engines requiring special oil analysis surveillance and/or sampling to local flying only. The appropriate work center function will annotate the proper equipment forms.

1.22.2. When an aircraft is restricted to a rated pilot or crew for the next flight following a maintenance action requiring an operational check, maintenance will notify maintenance scheduling and the MOC. The production superintendent or MOC will then notify operations of the restriction and required operational check.

Section 1C— Management Programs

1.23. Logistics Training Aircraft. The LTF will coordinate with the appropriate plans, scheduling, and documentation (PS&D) function and the production supervisor or squadron maintenance supervision for selecting training aircraft. The LTF will forward training requirements in a monthly format (including configuration and time periods) to PS&D by the end of the second week of each month for inclusion in the monthly maintenance schedule. Training requirements will be updated weekly and forwarded to PS&D by each Wednesday for inclusion in the weekly maintenance plan. Aircraft down for training more than 7 consecutive days must be carried in an aircraft possession purpose identifier code of TJ. The LTF is responsible for each designated logistics training aircraft assigned (in conjunction with the operations squadron) to include maintaining aircraft forms and coordinating on- and off-equipment maintenance.

1.24. Hangar Queen Program. The objective of this program is to ensure the entire fleet remains healthy and all possible management actions are carried out to ensure aircraft do not remain inoperative for extended periods.

1.24.1. Aircraft are considered Hangar Queens when they have not flown for a total of 45 possessed calendar days in their assigned purpose code (for example, TF or ZB). These days may or may not be consecutive, depending on changes of the possession purpose identifier code (PPIC). **NOTE:** Aircraft are exempt from accruing Hangar Queen time for up to 10 days immediately following depot or contract field team repair or maintenance to allow for aircraft recovery.

1.24.1.1. An aircraft will be removed from Hangar Queen status when it flies.

1.24.1.2. An aircraft will be reported in Hangar Queen status via the Monthly Logistics Indicator Report (MLIR), RCS: AETC-LGM(M) 7501 (AETCI 21-105, *Logistics Quality Performance Measures Reporting Procedures*).

1.24.2. Hangar Queen aircraft are further defined by three categories:

1.24.2.1. Category 1--Aircraft that have not flown for 45, but less than 75, days in their assigned purpose code.

1.24.2.2. Category 2--Aircraft that have not flown for 75, but less than 105, days in their assigned purpose code.

1.24.2.3. Category 3--Aircraft that have not flown for 105 or more days in their assigned purpose code.

1.24.3. The following examples illustrate possible Hangar Queen scenarios:

1.24.3.1. Example 1. A possessed aircraft (PPIC TF or ZB) has not flown for 10 days. It is placed in training (PPIC TJ) for 30 days. At the point the PPIC changes to other than TF or ZB, the days accumulating toward Hangar Queen status reporting stops. Next, the aircraft is reassigned PPIC TF and does not fly for 35 additional days. It has now accumulated a total of 45 calendar days in the assigned purpose code and is reported and managed as a category 1 Hangar Queen.

1.24.3.2. Example 2. A category 1 Hangar Queen (45 days) is put in PPIC DM due to unscheduled depot maintenance for a total of 30 days. In this case, the aircraft would not accumulate any additional Hangar Queen days and is exempt from further Hangar Queen reporting, but category 1 Hangar Queen management controls would still apply. When the aircraft reverts back to PPIC TF or ZB, it again begins accumulating Hangar Queen days and reporting would resume as a category 1 Hangar Queen (46 days).

1.24.4. Hangar Queen aircraft seriously affect unit mission and overall readiness. Managers at all levels must intensify their efforts to quickly alleviate Hangar Queen conditions as follows:

1.24.4.1. When an aircraft becomes a category 1 Hangar Queen, establish a maintenance recovery plan that minimizes the time needed to get the aircraft airborne. Assign a Hangar Queen manager (typically the aircraft crew chief) to implement the plan. Forming a temporary dedicated recovery team is also an option. Ensure strict management, control, and documentation of all cannibalizations, transfer, and diversion actions from the Hangar Queen aircraft. Brief aircraft maintenance and supply progress to the squadron commander daily and weekly to the group and wing commanders.

1.24.4.2. When an aircraft becomes a category 2 Hangar Queen, assign a SNCO or officer (or civilian equivalent) to manage the Hangar Queen. The group commander must approve any further cannibalizations, transfer, and diversion actions from the Hangar Queen aircraft. Brief aircraft maintenance and supply progress to the OG commander daily and weekly to the wing commander.

1.24.4.3. When an aircraft becomes a category 3 Hangar Queen, aircraft maintenance and supply progress will be briefed to the wing commander daily.

1.25. Vehicle Management. The LG and OG commanders are responsible for all vehicles assigned to their maintenance organizations, publishing MOIs or wing instructions to outline their vehicle control programs, and identifying vehicle control officers (VCO). To implement the vehicle management program, VCOs must be familiar with AFJMAN 24-306, *Manual for the Wheeled Vehicle Driver*; and AFOSH Standard 91-100, *Aircraft Flight Line - Ground Operations and Activities*. They must comply with AFI 24-302, *Vehicle Maintenance Management*. Specifically, VCOs will:

1.25.1. Allocate and maintain the status of all vehicles.

1.25.2. Negotiate with the transportation function for replacement vehicles as necessary.

1.25.3. Coordinate between vehicle maintenance and the appropriate function for assistance in repair of vehicular-mounted AGE.

1.25.4. Provide for special configuration of vehicles to ensure:

1.25.4.1. Delicate equipment in an unpacked condition is physically protected during transit. Physical protection consists of cushioning designed to prevent rolling or excessive movement,

which might misalign or damage components. The configuration of vehicles to provide this protection is a maintenance responsibility. The transportation vehicle maintenance function approves proposed configuration changes to vehicles before maintenance may modify them.

1.25.4.2. Vehicles authorized to carry explosives are configured under AFI 91-201, *Explosive Safety Standards*, and applicable AFOSH standards. Compliance with these directives is also required when operating vehicles within the munitions storage areas.

1.25.4.3. Radio-equipped vehicles assigned to maintenance are clearly identified to indicate the activity to which they are assigned. Use abbreviated call signs (for example, Talon 1, Blue 3, Bravo Super, or Golf). **NOTE:** This is optional for contractor-owned vehicles.

1.25.4.4. The transportation function performs all vehicle modifications, such as installation of trailer hitches or mirrors.

Section 1D— Management Support

1.26. Logistics Training Flight (LTF). An effective training program is essential to ensure personnel are qualified to accomplish assigned tasks in accordance with AETCI 21-103, *Maintenance Training, Qualification, and Certification Program*. The logistic support squadron's (LSS) LTF manages wing maintenance training programs and ensures training requirements are identified and scheduled. The upgrade training (UGT) program and ancillary training prescribed in AFI 36-2201, *Developing, Managing, and Conducting Training*, are the primary responsibilities of the applicable unit commander. The group commander will ensure equipment required to support the training schedule is made available.

1.27. Overview of Maintenance Analysis:

1.27.1. As a minimum, the maintenance analysis function will be comprised of production analysis and database management (DBM). A deficiency analysis section or element may also be included. Maintenance analysis is the primary source of aircraft maintenance data and analysis for the LG and OG, and it serves as an advisory activity for all matters concerning maintenance automated data systems. The function will be located within the current operations flight of the operations support squadron (OSS) and will support both the logistics and operations groups. The establishment of a data integrity team (DIT) process is also a responsibility of the maintenance analysis function.

1.27.2. Data integrity and validity is essential in AETC maintenance management systems (MMS). A DIT is established to manage documentation problems identified in the associated MMS (for example, CAMS, G081). Each AETC unit will establish a DIT process and outline it in a local OI. The OPR for the OI will reside in the maintenance data systems analysis section. (The OPR does not have to be the DIT chief). As a minimum, the DIT will designate at least one representative from each flying and maintenance squadron, maintenance analysis, PS&D, MOC, engine management branch (EMB), quality assurance (QA), as well as any tenant organizations or other representatives the OI identifies as necessary to the process. Representatives should be at least a 5-skill level and be familiar with the unit's assigned weapon system. These representatives will work with the DIT as their services are required. Some examples of duties a DIT might perform are:

1.27.2.1. Compare reported aircraft status with selected aircraft forms.

1.27.2.2. Compare AFTO Form 781A, **Maintenance Discrepancy and Work Document**, documentation with the data recorded in the MMS. Check for a mismatch of writeups in forms versus

the MMS; discrepancies signed off in forms, but not closed in the MMS; discrepancies completed in the MMS, but not signed off in forms; no job control number (JCN) in forms; or a corrective action in the MMS that does not match the aircraft forms.

1.27.2.3. For CAMS units, run program QBR (Maintenance Action Review Report) for all work done the previous day by squadron and by work center. Audit the QBR for narrative versus coding.

1.27.2.4. Develop a system to keep track of the percentage of errors by work center (errors found and total number of documents checked multiplied by 100). (**NOTE:** For tracking purposes, multiple errors on a single document should be counted as one error.) Prepare reports of rates and identify where errors are occurring. Maintain a cumulative corrected error rate database for reference. Provide feedback to users via monthly maintenance summaries, user's meetings, periodic how-goes-it memorandums, etc.

1.28. Specific Maintenance Analysis Responsibilities. This function:

1.28.1. Will provide information and analysis to improve the maintenance operation through the examination of various deficiencies of work centers, functions, particular equipment end items, maintenance practices, or management actions.

1.28.2. Has the overall responsibility within the wing for automated MMSs that support maintenance.

1.28.3. Is the OPR for the maintenance data collection contingency plan. As a minimum, DBM and maintenance functional managers will review the plan annually to ensure current mission objectives can be realized in the event of contingency operations.

1.28.4. Is the OPR for special data requests. Maintenance functions often have requirements for specific information not available in normal reports. If the requested information is already available in other reports, the analysts assist the user in recognizing, understanding, and correlating the existing data to meet requirements. If the requested information is not in a standard report, a customized inquiry and report may provide the needed information.

1.28.5. Will analyze the base self-sufficiency and repair capability. It will also analyze the base repair program to provide maintenance with the data needed to manage and determine work center repair capabilities. Air Force and AETC directives prescribe efforts to be made at all levels to maximize local repair capabilities (**Chapter 21**).

1.28.6. Will develop a guide to be given to all maintenance managers which outlines analysis capabilities. At a minimum, the guide should detail how analysis special studies can help solve problems, how maintenance data can be used to improve performance, how analysis can provide help with documentation problems, and what other analysis services are available. This guide should be presented to all newly assigned maintenance managers. Analysis capabilities should also be advertised in maintenance summaries, digests, and other media with wide dissemination capabilities.

1.29. Database Management (DBM). This function will:

1.29.1. Initiate and modify approved aircraft configuration management (ACM) tables. Prior approval to modify the configuration tables is not required if the change is the result of a time compliance technical order (TCTO). However, the function will notify HQ AETC/LGXI of the change.

- 1.29.2. Ensure periodic reports generated by the automated MMS are produced and sent to functions requiring the information. Also, ensure base or regional processing centers transmit required reports generated by automated MMS.
- 1.29.3. Oversee recovery procedures when computer failure causes the loss of data.
- 1.29.4. Monthly analyze automated reports which provide information concerning computer response times and the use and status of automated MMS remote devices.
- 1.29.5. Be the control point for customized automated MMS retrievals; for example, query language processing (QLP).
- 1.29.6. Ensure the timer interrupt switch is turned on or off as required.
- 1.29.7. Coordinate the loading of new releases, special programs, and changes to existing programs.
- 1.29.8. Assist the LTF in developing, scheduling, and conducting formal classroom and on-the-job training (OJT) for automated MMS users as required.
- 1.29.9. Ensure automated MMS users are authorized access to applicable transaction identification code (TRIC) screens on an as-required basis.

1.30. Host-Tenant Database Support. The host DBM will coordinate with all tenant DBMs to ensure each has access to the automated MMS data. The host DBM will provide needed assistance in solving automated MMS-related problems beyond the scope or capability of the tenant DBM. The host DBM will be the sole source of coordination with the base or regional processing center on all matters concerning the automated MMS. (Deviations from this policy must be clearly stated in local directives published by the host DBM.) The DBM will ensure base or regional processing centers fully support requirements concerning automated MMSs. The function will:

- 1.30.1. Have overall responsibility for automated MMS subsystems, although other group staff agencies manage selected subsystems. Major automated MMS subsystems are outlined in AFCSM 21-556, Volume 2.
- 1.30.2. Notify appropriate subsystem functional managers when programs and routines are not operating properly.
- 1.30.3. Review system advisory notices (SAN) with the affected subsystem manager to determine necessary action. Maintain a file of open SANs.
- 1.30.4. Maintain a list of functional managers of automated MMS subsystems and provide assistance and guidance for changes or problems affecting their area.
- 1.30.5. Maintains the automated MMS files. The operation of the automated MMS requires the database to be maintained free of errors and of sufficient size to accept all necessary data.
- 1.30.6. Perform database verification according to AFCSM 21-571, Volume 2, *Core Automated Maintenance System (CAMS), Users Manual*, monthly (or any time an error in the database is suspected) and correct indicated errors. Schedule these checks to minimize the impact on the computer and users. Investigate any suspected errors reported by users.
- 1.30.7. Establish local procedures for reporting abnormal system conditions and ensure corrective actions are accomplished.

- 1.30.8. Determine the severity of errors found in automated MMS files and select the best course of action to remedy the situation.
- 1.30.9. Monitor and control the submission of AF Form 1815, **Difficulty Report (DIREP) Worksheet**, and AF Form 3215 as related to the automated MMS. Submit a difficulty report (DIREP) after coordination with the base or regional processing center (RPC) only when a problem exists in an automated MMS routine as currently outlined in AFCSM 21-556, Volume 2. Keep a copy of each submitted DIREP until the problem is resolved; send an information copy of each DIREP to HQ AETC/LGXI.
- 1.30.10. Refer automated data systems (ADS) related problems that cannot be locally resolved by DBM personnel to HQ AETC/LGXI. Request assistance from system program managers if HQ AETC DBM cannot solve the problem.
- 1.30.11. Coordinate with base or RPCs to schedule periodic backup of the automated MMS files to prevent excessive loss of data in the event of failure. Backups must be scheduled to minimize system nonavailability to users.
- 1.30.12. Determine the best method of inputting large amounts of information and coordinate with and assist affected agencies.
- 1.30.13. Notify functional users of any scheduled or unscheduled computer off-line time and keep them informed of status changes. Use manual backup procedures for input to automated MMS while the systems are unavailable. Notify HQ AETC/LGXI of any excessive computer downtime that adversely affects off-base reporting requirements.
- 1.30.14. Establish procedures for coordinating and controlling background program and generated run (GENRUN) stream requirements.
- 1.30.15. Be the OPR for the maintenance ADS limited contingency plan for short-term automation nonsupport (5 days or less) and long-term nonsupport (more than 5 days). As a minimum, the plan must address:
- 1.30.15.1. Manual backup procedures for automated MMSs as well as restart and recovery priorities and procedures.
 - 1.30.15.2. Schedule priorities for systems and subsystems for off-site processing. Only those programs absolutely necessary for mission support will be processed off site unless the base or RPC gives prior approval.
 - 1.30.15.3. Procedures for accomplishing off-site processing and return and distribution of output products.
 - 1.30.15.4. Identification of personnel to proceed to the off-site location to coordinate processing.
 - 1.30.15.5. Restart and/or recovery priorities and procedures for home-site operations upon regaining base or RPC support.
- 1.30.16. Be the focal point for microcomputer hardware and software related to automated MMS such as CAMS, Reliability and Maintainability Information System (REMIS), or CAMSFM.
- 1.30.17. Establish procedures for reporting all suspected hardware failures. Determine whether an operator error or hardware failure has occurred and provides required assistance.

1.30.18. Monitor and control proposals or requests for additional and relocation of ADS hardware in coordination with the wing plans function.

1.30.19. Work with users and OPRs to help resolve microcomputer and interface problems beyond the capability of local system managers. Refer problems that cannot be resolved to the appropriate agency.

1.30.20. Reviews AF Forms 3215.

1.30.21. Coordinate and assist system managers in the preparation of communication requirements necessary for the installation and operation of microcomputer systems.

1.30.22. Monitor the automated MMS for incoming and outgoing REMIS data. Notify the configuration manager and subsystem monitors of REMIS errors for correction.

1.31. Production Analysis. This function will:

1.31.1. Collect and maintain the necessary data pertinent to the maintenance operation.

1.31.2. Review data for significant trends and isolate and identify areas that need further study or investigation. When further technical investigation is warranted and beyond the scope of the analysis function, they may request the appropriate group QA office to participate.

1.31.3. Prepare studies, summaries, briefings, and presentations as required or requested.

1.31.4. Identify and analyze trends in equipment and system performance.

1.31.5. Assist maintenance in applying and interpreting maintenance data publications and reports.

1.31.6. Analyze automated MMS data for integrity.

1.31.7. Establish procedures to load local work center codes as prescribed in TO 00-20-2, *Maintenance Data Documentation*.

1.31.8. Collect and analyze scheduling deviation data for aircraft or equipment.

1.31.9. Prepare the MLIR, RCS: AETC-LGM(M) 7501 (AETCI 21-105).

1.31.10. Analyze maintenance and flying performance data and provide the cause of any trends to management and scheduling functions. Develop annual and monthly attrition factors for weather, maintenance, supply, operations, and other variables into a total attrition factor (AETCI 21-104, *Aircraft Planning and Scheduling*.)

1.32. Deficiency Analysis. This function will provide technical and managerial analysis and investigation of equipment and system deficiencies, maintenance techniques, procedures, and directives. It may request assistance from the applicable QA office. This function will:

1.32.1. Conduct studies and review deferred discrepancy files, document files, and other information that may identify technical or managerial deficiencies.

1.32.2. Recommend improvements relating to systems, equipment, manpower utilization procedures, and the work environment.

1.32.3. Analyze QA maintenance evaluation data for adverse trends, which may indicate areas that require further analysis.

1.32.4. Analyze repeat and recurring discrepancy files. **NOTE:** The group commander will determine the frequency, depth, and extent of these reviews.

1.33. Information Management. The technical support functions of the OSS's current operations flight or logistics support squadron's maintenance operations flight will maintain correspondence files, prepare and submit maintenance reports, and control maintenance administrative procedures as directed by the LG or OG commander. The LG or OG commander may establish subordinate information management and technical administration functions throughout the maintenance activity and will publish an MOI or instruction describing these responsibilities and procedures.

1.34. Facilities Management. Group and squadron commanders are responsible for the effective management of facilities within their control. Facilities management will consist of identifying facility requirements, preparing and submitting requirements for new and additional facilities and/or repair of existing CE facilities. Base industrial engineering may aid in facilities management.

1.34.1. Studies are required to determine if the facilities in use are suitable for the assigned activities (AFI 32-1024, *Standard Facility Requirements*). Facility studies will provide the group commander with essential information for making facility assignment.

1.34.2. In coordination with the affected maintenance activity, environmental coordinator, LG, and base CE, the technical support function will develop the programming and environmental impact analysis process (EIAP) documents for major construction or modification projects.

1.34.3. In addition, the technical support function will ensure the aircraft parking plan is current and includes the requirements of the affected maintenance functions, including identifying each aircraft parking location. The plan must be coordinated with operations, security forces, safety, fire department, and other affected units before submission to the base CE.

1.35. Programs Management. The programs management functions of the LG maintenance operations flight and OG current operations flight will serve as the points of contact (POC) in maintenance for collecting, assembling, and forwarding maintenance inputs on mission and support plans to wing plans. They will provide budget, manpower, and facilities management inputs to and for the LG and OG commanders. They will also serve as the resource advisors for the maintenance functions to publish an MOI or wing instruction that prescribes the procedures for manpower, budget, and facility management. As a minimum, the MOI or wing instruction will include:

1.35.1. Requirements and procedures for establishing and maintaining the personnel subsystem of the automated MMS.

1.35.2. Requirements to provide personnel with appropriate automated MMS products when departing permanent change of station (PCS), permanent change of assignment (PCA), or temporary duty (TDY).

1.35.3. Procedures for the management of facilities and validation of telephone installation, removal, and change requests.

1.35.4. Procedures for budget preparation (AFI 65-601, Volume 1). **NOTE:** For contractor-operated activities, expenditures of government funds must not exceed quarterly targets without prior ACO approval.

1.35.5. Managing and processing unit personnel management rosters (UPMR) and unit manning documents (UMD).

Section 1E— Maintenance Operations Center (MOC)

1.36. MOC Responsibilities. The main function of the MOC is to monitor, coordinate, and report on the production effort. The MOC will monitor the implementation of the flying schedule (as well as scheduled and unscheduled maintenance) and report any deviations. Production superintendents and work center supervisors will set priorities for their respective production efforts to meet requirements. During periods of contingency tasking (simulated or actual), the MOC will assume increased responsibility for the maintenance effort. Personnel assigned to the MOC must be knowledgeable of the automated MMS applicable to the installation, and they must be qualified on at least one of the major weapon systems or items of equipment maintained. (Civil service employees assigned to the MOC are exempt from maintaining qualification on at least one major weapon system or equipment, but they must comply with civil service hiring practices and meet applicable position description requirements.) Specifically, the MOC will:

- 1.36.1. Coordinate maintenance as necessary to meet mission requirements.
- 1.36.2. Assist production superintendents when support is requested, establish priorities for repair shop support, and dispatch specialists to provide the requested support.
- 1.36.3. Maintains the status of:
 - 1.36.3.1. Each aircraft and its location on station maintained or supported by maintenance.
 - 1.36.3.2. Selected critical categories and levels of AGE and towing vehicles.
 - 1.36.3.3. Significant maintenance actions in progress.
 - 1.36.3.4. Aircraft restrictions.
 - 1.36.3.5. Aircraft configurations. Notify appropriate agencies when the configuration includes hot cargo or munitions.
 - 1.36.3.6. Partial mission capable supply (PMCS) and not mission capable supply (NMCS) start and stop times (in coordination with supply).
- 1.36.4. Coordinate with supply and appropriate maintenance functions when pre-positioned assets or parts allocated for specific jobs are required for unscheduled maintenance.
- 1.36.5. Request fire department standby for fuel and defuel requirements as required.
- 1.36.6. Manage the automated MMS as follows:
 - 1.36.6.1. Ensure aircraft status is properly reported (in coordination with the production superintendent) and maintained within the automated MMS according to AFCSM 21-564, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Users Manual*, and AFI 21-103/AETC Sup 1, *Equipment Inventory, Status, and Utilization Reporting*.
 - 1.36.6.2. Input start and stop actions for all applicable operational events.
 - 1.36.6.3. Monitor and update estimated times in commission (ETIC). If ETICs are not maintained in the automated MMS, they will be maintained and monitored on MOC status boards. The MOC will consolidate multi-work center ETICs to arrive at an overall ETIC for the aircraft or equipment.

- 1.36.6.4. Inform the OSS plans and scheduling (P&S) when a possession code change is required. P&S will process the change.
- 1.36.6.5. Start and stop operational events when the automatic option (automated MMS TRIC operating time update [OTU]) is not used.
- 1.36.7. Monitor aircraft, trainers, and trainer-related equipment and the status of scheduled and unscheduled maintenance requirements.
- 1.36.8. Monitor, record, and report flying schedule deviations (AETCI 21-104).
- 1.36.9. Monitor Hangar Queen aircraft and provide Hangar Queen and deviation data to HQ AETC/LGMMA according to AETCI 21-105.
- 1.36.10. Disseminate and transmit information to the affected work centers concerning changes in maintenance plans, schedules, and/or priorities (AETCI 21-104).
- 1.36.11. Coordinate with the control tower and monitor aircraft movement and maintenance engine runs.

1.37. Facilities. MOC facilities must meet the minimum standards prescribed in this instruction. When facility improvements or new facilities are being planned, apply the guidance in AFI 32-1024 and AFI 32-1063, *Electric Power Systems*, and refer to the AETC Standards of Installation Excellence (available at base CE).

1.38. Use of Visual Aids To Show Equipment Status. Visual aids will be used to clearly portray equipment status. (When automated systems are used, develop procedures for display and/or retrieval of products on a regular basis. Retain printed retrieval products in case of system failure.) Visual aids must be neat, covered with a transparent material to permit posting with grease pencil, and functionally arranged to reflect the necessary information concisely. Automated products or computer screens may replace manual status boards. If so, ensure an MOI or wing instruction details their use and all requirements of the manual boards are included. Visual aids may consist of the following standard status boards:

- 1.38.1. Aerospace vehicle status board. This board portrays serial number, location, priority, configuration, restrictions, and remarks and status. (ETICs may either be displayed on status boards or maintained in an automated MMS.)
- 1.38.2. Flying schedule board. This board portrays each aircraft scheduled for flight each day. It includes serial numbers, scheduled takeoffs, actual takeoffs, scheduled landings, sortie configurations, and remarks. (A flying schedule board may be combined with an aerospace vehicle status board.)
- 1.38.3. Generation board, if required. This board portrays an EWO, general war plan, and other special mission equipment or requirements. Each activity assigned a mobility or dispersal commitment locally will fabricate portable boards to meet mission requirements during deployments.

1.39. Specialist Dispatch. Specialists dedicated to on-equipment maintenance will normally be assigned to the OG sortie generation flight and dispatched by the flight line production superintendent. Specialists assigned within the logistics group maintenance squadrons who are required to perform on-equipment maintenance (such as NDI, repair and reclamation, aero repair, and structural repair) may be dispatched from the shop or a centralized dispatch or mobile location as determined by the LG commander. In this

case, the flight line production superintendent will request needed support through the MOC (or maintenance squadron production superintendent, if assigned).

1.40. AGE Dispatch. The MOC or AGE function (as determined by the LG) will dispatch AGE. Regardless of which function is selected, close coordination must be maintained between the MOC, using activities, and AGE function. Propulsion- and munitions-related AGE may be maintained within the respective flight or element.

1.41. Procedural Checksheets. In coordination with affected work centers, flights, and the production superintendent, the MOC will develop and maintain procedural checksheets. Checksheets will contain short, memory-jogging phrases to ensure procedures are complied with in the proper order. Each checksheet will show individual coordinator responsibilities. The senior coordinator will maintain a master checksheet booklet. As a minimum, checksheets will be developed for use in the event of the following:

- 1.41.1. Broken Arrow.
- 1.41.2. EWO notification.
- 1.41.3. Major accident response (such as an aircraft crash, explosive mishap, or chemical or fuel spill).
- 1.41.4. Aircraft in-flight emergency.
- 1.41.5. Unauthorized aircraft movement, hijacking, or sabotage.
- 1.41.6. Maintenance area, hangar, or flight line fire.
- 1.41.7. Resource protection.
- 1.41.8. Threatening phone call or bomb threat.
- 1.41.9. Attack response.
- 1.41.10. Recovery and decontamination of damaged aircraft.
- 1.41.11. Power or communication failure, including MOC evacuation.
- 1.41.12. Weather and/or storm warnings.
- 1.41.13. Combat turnaround.
- 1.41.14. Off-station aircraft recovery.
- 1.41.15. Aircraft impoundment.

1.42. Event Identification Numbers (EID), Identification (ID) Numbers, and Work Center Codes. Three key data elements used to authorize and control maintenance are EID numbers, ID numbers, and work center codes. Procedures for assigning and using them are in TO 00-20-2 and AFCSM 21-563, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Time Compliance Technical Order (TCTO), Users Manual*.

- 1.42.1. The EID is a code used to assign, identify, and track a designated maintenance task. EIDs are automatically assigned in automated MMSs when a work order is initiated.

1.42.2. The ID number is a code used to identify an end item of equipment. Listings of ID numbers are produced by data management and validated semiannually by the owning work center (OWC). Automated MMSs validate equipment listings via TRIC equipment listing (ELT).

1.42.3. The work center code is used to identify the organization, function, or activity assigned basic custodial responsibility for an item of equipment. It also identifies the functional element to which maintenance technicians are assigned. In coordination with the programs function, data management assigns all work center codes.

1.43. Preselected Aircraft. When a preselected number of aircraft is required to meet critical periods of EWO and contingency commitments, the operations squadron will select the tail numbers of the aircraft needed to meet the requirements. The aircraft status board or secure automated system will portray the order the aircraft will be placed in the generation sequence and reflect any revisions made by the operations squadron.

Section 1F—Plans, Scheduling, and Documentation (PS&D)

1.44. Senior Scheduler Responsibilities. The senior scheduler is assigned to the OSS's current operations flight. He or she will:

1.44.1. Guide the scheduling process in centralized or decentralized units to ensure adherence to proper scheduling procedures by semiannually visiting all scheduling functions. He or she will record and brief the squadron maintenance officer or superintendent (or civilian equivalent) on significant findings.

1.44.2. (*Blue-suit units only*) Serve as the wing's functional manager for all assigned scheduling personnel (Air Force specialty code [AFSC] 2R1X1). He or she will perform an initial evaluation of incoming personnel and coordinate with the gaining squadron to provide assessment of individual training needs.

1.44.3. Develop a master training plan in conjunction with squadron maintenance officers or superintendents (or civilian equivalent) and review AFSC 2R1X1 training programs. (Refer to AFI 36-2201 and AETCI 21-103 to establish the master training plan's minimum requirements.) For TSgt and below, the senior scheduler will establish a plan for rotating personnel at least every 24 months (not to exceed 36 months) through various duty positions to increase career field knowledge and experience. This rotation plan also applies to personnel with a 3- or 5-skill level personnel regardless of grade. **NOTE:** Civil service and contractor maintenance organizations must comply with their training plan as established per their performance work statement (PWS) or statement of work (SOW).

1.44.4. Develop AF Form 2408, **Generation Maintenance Plan**, and AF Form 2409, **Generation Sequence Action Schedule** (in coordination with squadron maintenance officers or superintendents, supervisors, the squadron PS&D, and the MOC) to meet war plan objectives and contingency taskings and to establish procedures for their use.

1.44.5. Serve as the wing's aerospace distribution officer (AVDO).

1.44.6. Consolidate time change item (TCI) forecasts for selected items listed in TO 00-20-9, *Forecasting Replacement Requirements for Selected Calendar and Hourly Time Change Items*; specific commodity; and -6 TOs. Units will use the SBSS module of CAMS, if available, to order TCIs, using the procedures in AFCSM 21-579, Volume 2, *Core Automated Maintenance System (CAMS) DSD*:

G054/FS, Maintenance-Supply Interface, Users Manual. Forward an info copy of the forecast to HQ AETC/LGMTS.

1.44.7. Ensure the SBSS module of CAMS is used to order TCTO kits or parts required by the TCTO. Refer to procedures in AFCSM 21-568, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Users Manual*, and AFCSM 21-579, Volume 2. When SBSS interface is not available, initiate three copies of AF Form 2001, **Notification of TCTO Kit Requirements**. Forward two copies and a copy of the TCTO to the supply TCTO monitor. Assign ID numbers to kits as they are received using AETC Form 523, **Aircraft Scheduled Inspection Forecast**, as a guide if the compliance period warrants. As a minimum, load TCTO supplements that require additional work, change existing maintenance procedures, or place additional demands on supply.

1.44.8. Attend the monthly supply TCTO reconciliation meeting (AFMAN 23-110). Maintain six TCTO reconciliation listings and meeting minutes.

1.45. P&S Responsibilities: (*NOTE:* Although the responsibilities of the P&S and the documentation function are addressed separately, the functions may be combined.)

1.45.1. OSS PS&D (or equivalent) will:

1.45.1.1. Compile, reproduce, and distribute monthly plans and weekly schedules. Weekly schedules will be distributed by 1400 on Friday of the week proceeding the effective week. Scheduling sections may distribute monthly plans and weekly schedules electronically via secure LAN or Intranet. (Sufficient copies of approved monthly plans and weekly schedules must be available to work centers without LAN or Intranet capabilities.) The OSS PS&D (or equivalent) will maintain the original signed copy on file according to AFMAN 37-139.

1.45.1.2. Establish a standardized format for monthly plans and weekly and daily utilization and maintenance schedules.

1.45.1.3. Publish an MOI or wing instruction prescribing procedures for assigning EIDs in the event the automated MMS becomes inoperative.

1.45.1.4. Participate in scheduling meetings, representing OSS PS&D responsibilities.

1.45.1.5. Manage programmed depot maintenance (PDM) and other depot level maintenance program schedules (TO 00-25-4, *Depot Maintenance of Aerospace Vehicles and Training Equipment*).

1.45.1.6. Publish an MOI or unit instruction describing local procedures for the accomplishment of aircraft document reviews.

1.45.2. Squadron maintenance PS&D (or equivalent PS&D) will: (*NOTE:* Squadron scheduling personnel will be administratively assigned and report to the squadron maintenance officer or superintendent.)

1.45.2.1. Plan and schedule the utilization and maintenance of aircraft, trainers, and associated support equipment.

1.45.2.2. Schedule TCTOs, MAJCOM modifications, and MAJCOM and local one-time inspections. (AFI 21-101).

1.45.2.3. Develop utilization and maintenance plans and schedules (as a minimum, long-range and monthly plans and weekly schedules) as well as any additional plans designated by operations squadrons or OG and LG commanders. Automated or manual scheduling procedures may be used for all equipment (**Chapter 5**).

1.45.2.4. Produce and deliver a reproducible copy of the weekly utilization and maintenance schedule to OSS P&S by 1200 on Thursday of the week preceding the effective week.

1.45.2.5. Load flying schedules in the automated MMS by 1400 on Friday of the week preceding the effective week (if an operational event subsystem is used) or prior to the daily scheduling meeting for the next day. UPT and SUPT units are only required to load the first go of the flying day.

1.45.2.6. Be the single point of contact (POC) between operations and maintenance to establish firm maintenance and operations flying schedules that will adequately support requirements (AETCI 21-104).

1.45.2.7. Project airframe capability (AETCI 21-104).

1.45.2.8. Calculate and report maintenance scheduling effectiveness (**Chapter 5**).

1.45.2.9. Coordinate with appropriate work centers on scheduled maintenance requirements, perform aircraft document review (**Chapter 11**), and attend scheduling meetings.

1.45.2.10. Review the automated MMS before each daily scheduling meeting to ensure scheduled maintenance actions have been completed and updated as appropriate. This includes verification of new inspection and TCI due times.

1.45.2.11. Establish periodic maintenance (PE), isochronal (ISO), or phase inspection day requirements in coordination with the inspection supervisor.

1.45.2.12. Conduct predock and postdock meetings and review inspection documentation packages to ensure they are processed (**Chapter 8**).

1.46. Documentation Responsibilities. This function maintains equipment historical records using automated MMSs or, when necessary, manual systems.

1.46.1. OSS documentation or equivalent will:

1.46.1.1. Manage TCTOs, MAJCOM modifications, and one-time and local inspections (AFI 21-101). Ensure TCTO configuration management systems status accounting reports are updated and returned to the air logistics center (ALC) (TO 00-20-4). Coordinate with each squadron PS&D on the distribution of kits or parts based on mission needs.

1.46.1.2. Ensure TCIs identified in TO 00-20-9 are forecasted within the appropriate frequency. (Refer to TO 00-20-9 for correct forecast frequencies.) Compile unit forecasts and send them to supply for nonmunitions items and to the servicing munitions activity (FV account) for explosive cartridge-activated device/propellant-actuated device (CAD/PAD) items (**Chapter 7**). Units will send a courtesy copy of their annual egress explosive CAD/PAD forecast to HQ AETC/LGMW and LGMTS.

1.46.1.3. Monitor the inspection and time change subsystems in the automated MMS. Quarterly, review and document (on AF Form 2411, **Inspection Document**) time distribution inspection

(TDI) reports for each aircraft inspection and time change job standards (JST). As a minimum, review for overdue, missing, and excess inspections and time changes. When errors are detected, send a formal notification to the squadron PS&D, if assigned, or to the performing work center to coordinate the correction in the automated MMS. Establish a suspense date for the correction. Annotate the corrective action on the formal notification and maintain it on file in OSS PS&D until verified on the next quarterly review.

1.46.1.4. Load JSTs for aircraft -6 special inspections and time changes with frequency of more than 30 days or 50 hours or more into the automated MMS. (**NOTE:** Regardless of the frequency, any inspection or time change requirement may be loaded.) For TCIs, load only the date of manufacture or date of installation JST, whichever due date occurs first.

1.46.1.5. Manage the job master list (JML) in the automated MMS. (**NOTE:** For G081 units, the JML is the 781D.) Update the JML/781D as changes occur to governing TOs. Semiannually, reconcile the JML/781D with appropriate aircraft -6 TO, TO 00-20-9, and commodity-series TOs listed in TO 00-20-1, *Aerospace Equipment Maintenance General Policies and Procedures*. Document the semiannual review on AF Form 2411.

1.46.1.6. Perform the inventory function of the AVDO in the automated MMS. Establish written procedures for flying hour accounting accuracy (AFCSM 21-564, Volume 2, and AFI 21-103).

1.46.1.7. Manage the aircraft configuration management (ACM) subsystem in the automated MMS and develop written guidance for reconciling, updating, and correcting aircraft configurations in the automated MMS database. For example, the egress function has responsibility for maintaining CAD/PAD items, and flight line avionics has the responsibility for tracking line replaceable units (LRU). ACM provides unit managers the capability to determine the actual versus approved configuration of an aircraft. The intent of the ACM is to ensure selected serially controlled and/or TCIs are properly loaded into the automated MMS database.

1.46.1.8. Act as the maintenance POC for publishing the sortie configuration code list.

1.46.1.9. Manage and ensure the accuracy of aircraft utilization code (AUC) tables.

1.46.1.10. Comply with -21 TO equipment accountability according to AFI 21-103 and/or its AETC supplement. (This requirement may be decentralized to the operations squadron.)

1.46.2. Squadron maintenance documentation (or civilian maintenance agency equivalent) will:

1.46.2.1. Maintain aircraft jacket files (TO 00-20-1). Review forms sent for filing to ensure they are filed in sequential order and none is missing. Develop procedures to account for missing documents.

1.46.2.2. Notify the appropriate work center function when a TCTO requires an entry into current equipment documents (AFI 21-101).

1.46.2.3. Prepare TCI forecasts according to TO 00-20-9. Send forecast to OSS PS&D for consolidation with other unit forecasts (**Chapter 7**).

1.46.2.4. When notified by operations that refueling documents (AF Form 15, **United States Air Force Invoice**) for aircraft refueling at non-Air Force installations are missing, reproduce one copy of the applicable AFTO Form 781H, **Aerospace Vehicle Flight Status and Maintenance Document**, and forward it to the appropriate operations function.

1.47. Filing and Disposition. The documentation function will establish a file for aircraft and maintenance historical documents according to AFMAN 37-123, *Management of Records*, and TO 00-20-1. Documents will be disposed of according to AFMAN 37-139.

Section 1G—Engine Management (EM)

1.48. EM Function. The EM function assigned to the LSS will centralize the elements that support EM by managing the unit's effort to maintain adequate engine support to meet mission requirements. EM will encompass the sections of the base engine manager (BEM) and engine scheduling and documentation.

1.49. BEM Responsibilities. The LG commander will appoint (in writing) a BEM (if a host) or an AETC unit engine monitor (UEM) (if a tenant) to ensure accomplishment of BEM and UEM duties outlined in current directives and TOs. The BEM or UEM will be selected from AFSC 2R1X1 or 2A6X1A/B (or civilian equivalent) with a 7- or 9-skill level. As a minimum, the appointed alternate will be a 5-skill level from the above AFSCs (or civilian equivalent). The BEM or UEM will:

- 1.49.1. Advise the LG commander on engine logistic concepts, principles, policies, procedures, and techniques.
- 1.49.2. Assume responsibility for and maintain the base engine FJ stock record account.
- 1.49.3. Develop local EM supplements (as necessary) to AFI 21-104, *Selective Management of Selected Gas Turbine Engines*, designating local policies, procedures, and responsibilities.
- 1.49.4. Ensure data in the central database (CDB) is correct.
- 1.49.5. Ensure selected engine monitors are identified and trained for deployed operations.
- 1.49.6. Perform periodic quality audits to monitor the accuracy and timeliness of reporting to CDB.
- 1.49.7. Conduct and document Comprehensive Engine Management System (CEMS) training annually for personnel reporting engine status, utilization, scheduling, and documentation covering current directives.
- 1.49.8. Maintain a file of shipping documents for engine shipments and receipts. Include the type of device used to transport the engine on all shipping documents.
- 1.49.9. Obtain approval from the command engine manager prior to early return of engines or modules to depot or Queen Bee.
- 1.49.10. Ensure requirements listed in AFI 21-104; TO 00-85-20, *Engine Shipping Instructions*; and TO 2J-J1-18, *Preparation for Shipment and Storage of Gas Turbine Engines*; are complete prior to engine and module shipments. Coordinate closely with the base traffic management office to provide timely shipments of engines.
- 1.49.11. Verify all update transactions, such as operating times and TCTOs, are input prior to reporting engine or module removals to the CDB.
- 1.49.12. Ensure transient engine support is accomplished according to directives and TOs.
- 1.49.13. Reconcile and inventory all modules, onhand TCIs, and TCTO kits at least annually.

1.50. EM Responsibilities. The EM function will manage, forecast, and validate all engine removals and replacements, parts tracking, inspections, TCTOs, TCIs, and engine records. This function will encompass the planning and documentation function. The EM function will:

1.50.1. Coordinate with PS&D and propulsion functions on scheduled and unscheduled replacement of engines, components or modules, TCIs, inspections (**Chapter 7**), and TCTOs (AFI 21-101) for inclusion into maintenance plans. The function will develop and maintain long range plans (current and next 2 months) based on projected equipment use and estimated unscheduled removals. It will update this forecast monthly on AETC Form 520, **Engine Maintenance and Inspection Forecast**, and provide a copy to PS&D.

1.50.2. After reviewing operating times and possible impacts on future schedules, advise the propulsion function on recommending tracked engine components for cannibalization.

1.50.3. Perform TCTO and TCI program management on all assigned and possessed engines, modules, and propulsion-related components.

1.50.4. Maintain engine historical files according to 00-20 series TOs, AFMAN 37-123, and AFMAN 37-139. The function will process suspense validations for historical document entries and print a hard copy for filing as major changes occur.

1.50.5. Verify engine, module, and component operating times during document reviews (**Chapter 11**).

1.50.6. Maintain the engine-related JML in the automated MMS and update the JML as changes occur to governing TOs. Semiannually, the function will reconcile the JML with the appropriate aircraft -6 TO and applicable engine TOs and document the semiannual review on AF Form 2411. (The form will be kept on file until replaced by the next review.)

1.50.7. With the aid of the propulsion function chief and BEM, develop a detailed 6-month engine and/or module removal forecast that balances workload with maintenance capabilities. The function will include projected unscheduled removals based on past history indicators provided by analysis for modular engines only.

1.50.8. Upon engine removal, verify engine component forecasts for any additional TCI, TCTO, inspection, or delayed discrepancies for possible accomplishment in conjunction with the maintenance being performed.

1.50.9. Input reportable engine transactions for daily transmission to the CDB located via the CEMS terminal.

1.50.10. Prepare engine work packages for engines undergoing scheduled maintenance. Review work packages and/or work actions in the automated MMS to ensure completion of maintenance actions prior to releasing an engine to spare status.

1.50.11. As a minimum, retain products used during quarterly reconciliation with the CDB until the next reconciliation is accomplished and verified.

1.50.12. Coordinate with the operations squadron PS&D on projected monthly and weekly utilization. Initiate and complete AETC Form 520 for inclusion into monthly plans and weekly schedules. Forward the monthly forecasts by Monday of the third week proceeding the planning month; forward weekly forecasts by Tuesday. (Locally generated automated products may be used.)

1.50.13. Select engines for issue to align engine times and/or inspection intervals with aircraft inspection due times. (Alignment of engine to airframe times takes precedence if a conflict exists between inspection and functional check flight (FCF) requirements.) Comply with aircraft and/or engine -6 series inspection documentation requirements.

1.50.14. Schedule the acceptance inspections on newly gained or assigned engines and modules including a thorough review of historical documents.

1.50.15. Participate in pre- and post-inspection meetings according to **Chapter 8**.

1.51. Engine Monitoring (Function) Responsibilities. This function will:

1.51.1. Monitor engine resources during the repair and inspection process and, as a minimum, maintain the following data:

1.51.1.1. Assigned aircraft serial numbers reflecting installed engine serial numbers by position.

1.51.1.2. Weekly or daily scheduled engine maintenance (including MDS, aircraft serial number, and engine position) by serial number, reason for removal, date of scheduled removal, date replacement engine required, and projected replacement engine serial number.

1.51.1.3. Unscheduled engine requirements to include MDS, aircraft serial number, engine position and serial number, reason for removal, ETIC, location, and projected replacement engine serial number.

1.51.1.4. Serviceable spare data, including the type, model, and serial modification (TMSM) of the engine, position, serial number, time since overhaul, time to next inspection, FCF requirement, and preservation data.

1.51.2. Ensure necessary flowcharts or boards are maintained to portray current status of engines in work.

1.51.3. Process cannibalization and transfer actions (**Chapter 16**).

1.51.4. Monitor the movement of engines through the jet engine intermediate maintenance (JEIM) function.

1.51.5. Inform the propulsion supervisor of significant engine and repair cycle asset production delays.

1.52. Engine Inspection Interval Overfly. In all cases, individual equipment TO restrictions or guidance on engine overflies will not be exceeded. Refer to applicable weapon systems TOs and manuals.

Chapter 2

PRODUCTION ACTIVITIES AND PROCEDURES

Section 2A—General Responsibilities

2.1. Management Components. The maintenance activity will be functionally organized subordinate to the LG and OG commander (or civilian counterpart) and will be responsible for maintenance of assigned aerospace equipment. Functional management alignment of the maintenance activity will consist of the following components: the group commander (LG, OG, or civilian equivalent), group staff (QA, weapons standardization [WS] if applicable, and stan/eval), squadron maintenance superintendents, production supervisor, flight chiefs and commanders, section chiefs, and element chiefs (if assigned). If one supervisory level is absent in the unit organization, the level above will assume the responsibilities of the missing level. The civilian equivalents to the above management components will apply at contract or civil service maintenance organizations. **NOTE:** for the purpose of this instruction, the terms group commander, LG, or OG will apply to the director of maintenance (DOM) at civil service or contract maintenance organizations.

2.2. Squadron Maintenance Officer (SMO) and Maintenance Superintendent (MS). Each SMO and MS (or civilian equivalent) will be subordinate to his or her respective squadron commander and responsible for the management of maintenance production within the assigned squadron. The SMO and/or MS will:

2.2.1. Recommend or approve tasks requiring special certification, using the prerequisites in **Table 2.1**. Use AETC Form 666, **Change to Inspector/Special Certification Listing**, or AF Form 2426, **Training Request and Completion Notification**, to make additions or deletions to the special certification roster (SCR). See AFI 21-101 for Air Force SCR guidance.

2.2.2. Select the most qualified and capable 7-skill level MSgt or higher military personnel (and/or civilian equivalent) for duties as production superintendent.

2.2.3. Support quality, safety, security, training, mobility, and personnel reliability programs.

2.2.3.1. Ensure supervisory participation and support of the unit quality maintenance program.

2.2.3.2. Administer the applicable safety programs and coordinate with the LTF and supervisors to ensure all personnel receive the required safety training and are aware of safety implications within the work environment. The SMO must also coordinate with bioenvironmental engineering to ensure facilities meet industrial environmental and AFOSH standards.

2.2.3.3. Ensure adequate security procedures are in place for all assigned aerospace equipment.

2.2.3.4. Ensure the unit training plan and training procedures appropriately augment unit needs and mission directives.

Table 2.1. Mandatory Special Certification Roster (SCR) and Prerequisites.

I T E M	A	B
	Mandatory SCR Item Titles	Prerequisites
1	Red-X/IPI - all systems (no egress) Red-X-downgrade	Maintenance officer, MSgt or higher (or civilian equivalent), recommended by the flight chief (or equivalent), and approved by the group commander (note 1).
2	Exceptional release (ER)	Maintenance officer, MSgt or higher (or civilian equivalent), recommended by the SMO, MS, or equivalent (notes 1 and 2).
3	Red-X and/or IPI – nonegress only (by primary AFSC [PAFSC], if applicable, and MDS)	SSgt, 7-skill level or higher (or civilian equivalent), recommended by immediate supervisor and flight commander (or equivalent), and approved by the SMO (or equivalent). For Red-X and IPI egress only, additional requirements contained in AFI 21-112, <i>Aircraft Egress Systems Maintenance</i> , must also be satisfied prior to certification (notes 1, 2, and 3).
4	Red-X and/or IPI - egress only (per each MDS)	
5	Red-X and/or IPI - limited (per each MDS), for tasks outside PAFSC through cross-utilization training or limited tasks within the PAFSC	SSgt, 7-level or higher (or civilian equivalent), recommended by immediate supervisor and flight commander (or equivalent), and approved by the SMO or assistant. Use for personnel certified on tasks in other AFSCs through cross-utilization training or personnel certified on limited tasks within their AFSC as determined by the unit (notes 1, 2, and 3).
6	Certified mechanic (CM) (per each MDS)	Five-skill level or higher (or civilian equivalent), recommended by the first-line supervisor, reviewed by the squadron certification board and SMO or MS, confirmed by the squadron commander, and approved by the group commander (note 1). (For the certification process, comply with requirements in AFI 21-101.)
7	Certified master mechanic (CMM) (per each MDS)	Seven-skill level or higher (or civilian equivalent), recommended by the first-line supervisor, reviewed by the squadron certification board and SMO or MS, confirmed by the squadron commander, and approved by the group commander (note 1). (For the certification process, comply with requirements in AFI 21-101.)
8	NRTS and serviceability tag	All CMs and CMMs. SSgt or higher (or civilian equivalent), recommended by immediate supervisor, and approved by the flight commander or MS (notes 1, 2, 3, and 4).

I T E M	A	B
	Mandatory SCR Item Titles	Prerequisites
9	Engine run (per each MDS), indicate power settings, as applicable (includes engine intake and exhaust inspections for the purpose of engine run)	SrA, 5-skill level or higher (or civilian equivalent), with a minimum of 1 year time in grade. Certification will be accomplished according to AFI 11-218/AETC Sup 1, <i>Aircraft Operation and Movement on the Ground</i>
10	Flight control diagnostic or rigging team or team chief, when applicable (per each MDS)	SSgt, 7-skill level or higher (or civilian equivalent), qualified in all aspects of the diagnostic and rigging tasks of the particular MDS aircraft, recommended by the flight commander or flight chief, and approved by the SMO or MS (notes 1 and 2).
11	Blade blending certifier (F-100 engines only)	TSgt, 7-level 2A671A or higher (or civilian equivalent), recommended by the flight commander, and approved by the SMO or MS (notes 1 and 2).

NOTES:

1. For the purpose of special certification items listed in this table, civil service personnel equivalents are as follows: SSgt--GS-5, WS-5, WL-5, WG-8, or higher; MSgt--GS-8, WL-8, WS-8, WG-12, or higher; and CMSgt/maintenance officer--GS-11, WS-11, WG-15, or higher. Contractor equivalents are as follows: SrA (1 year time in grade)--aircraft worker or field maintenance worker or higher; SSgt--aircraft mechanic or field maintenance mechanic or higher; MSgt--senior mechanic or higher; CMSgt/maintenance officer--foreman or branch chief or higher. AFSC levels are as follows: 5-skill level--GS-4, WG-7, WL-4, servicer, worker, or higher; 7-skill level--GS-6, WG-10, WL-6, WS-3, mechanic, or higher.
2. When a critical shortage of qualified personnel exist, group commanders or their designated representatives--not lower than squadron commander per AFI 21-101--or civilian equivalents (in civil service organizations) may approve grade- or skill-level waivers for exceptionally well-qualified 5-skill level (or civilian equivalent) technicians. (**NOTE:** They must be a least a 7-skill level MSgt for ER and Red-X all systems and a 7-skill level for F-100 blade blending certifier.) Individuals considered for waivers must satisfy all other mandatory requirements and prerequisites. Waiver requests must be in writing, and file copies of approved waivers or AETC Forms 666 (with waiver justification and approval) must be maintained by the maintenance supervisor or equivalent. Contractor MAs will submit waiver requests through the chief, QAE, to the group commander (wing commander for 80 FTW) for approval. (The chief, QAE, through the contracting officer may disapprove waiver requests without group commander coordination.)
3. The SMO may delegate approval authority to the flight commander or MS.

4. Munitions inspectors who are trained and certified in accordance with AFI 21-201 may annotate serviceability tags for munitions items (TO 11A-1-10, *General Instruction—Munitions Serviceability Procedures*).
- 2.2.4. Ensure maintenance and supply disciplines are practiced in concert with budget management. Also ensure unnecessary supplies and equipment are properly turned in to base supply according to **Chapter 18**, this instruction; AFMAN 23-110, Volume 2, Part 2; and AFMAN 23-110, Volume 2, Part 13, *Standard Base Supply Customer's Procedures*.
- 2.2.5. Ensure compliance with Office of Personnel Management directives and Air Force civilian personnel 36-series (formerly 40-series) directives, as applicable.
- 2.2.6. Ensure compliance with the wing hazardous material management program.
- 2.2.7. As applicable, ensure the PMEL facility meets requirements for certification (TO 00-20-14, *AF Metrology and Calibration Program*). Ensure new construction requirements or renovations are performed according to AFMAN 32-1094, *Criteria for Air Force Precision Measurement Equipment Laboratory Design and Construction*, Chapter 10.
- 2.2.8. Ensure minimum disruption to maintenance and operational schedules. Also ensure activities such as commanders call, group training, squadron details, and military formations are considered when developing the maintenance plans.
- 2.2.9. Determine unit maintenance capability.
- 2.2.10. Coordinate planning data and schedules for quarterly, monthly, weekly, daily, EWO, contingency, and exercise requirements with appropriate flight chiefs and/or commanders and section chiefs.
- 2.2.11. Coordinate with the maintenance plans function on all support agreement requirements (AFI 25-201).
- 2.2.12. Determine critical AGE levels by using the minimum number of each type AGE required to meet operational and training requirements.
- 2.2.13. Review aircraft schedule deviations.
- 2.2.14. Ensure Hangar Queen aircraft are kept to a minimum.
- 2.2.15. Ensure maintenance responds to in-flight emergencies (IFE) as required.
- 2.2.16. In conjunction with squadron mobility officers and/or NCOs, periodically review maintenance limiting factors and/or shortfalls and mobility simulation requests.
- 2.2.17. As applicable, develop (or work with tasked units to develop) mobility and/or beddown plans (such as base support, parking, joint support) and procedures for deployment or employment and generation and regeneration operations under combat, emergency, and exercise conditions.
- 2.2.18. Ensure compliance with the FOD prevention program (**Chapter 14** and AFI 21-101).
- 2.2.19. Ensure compliance with combat sortie generation training requirements (outlined in **Chapter 22** and **Chapter 23**).

2.3. Flight Chief and Flight Commander. If assigned, the flight chief and flight commander (or civilian equivalent) will be subordinate to the respective SMO or MS, as applicable, and responsible for the management of maintenance production within the flight. The flight chief and/or flight commander will:

- 2.3.1. Designate section chiefs and element chiefs as required.
- 2.3.2. Review requirements for and the condition of AGE, vehicles, and other SE.
- 2.3.3. Ensure sections and/or elements keep records (on AFTO Forms 244, **Industrial/Support Equipment Record**) of inspections, service, and maintenance for assigned industrial equipment.
- 2.3.4. Evaluate the use and adequacy of facilities and identify construction and self-help project needs. Ensure facility construction and self-help projects are coordinated with the LG environmental coordinator for required EIAP document preparation.
- 2.3.5. Review production and equipment performance reports to identify deficient areas, implement corrective actions, and follow up as required.
- 2.3.6. Ensure technicians have the proper equipment, tools, and TOs and training meets mission requirements. Ensure assigned TO files contain sufficient types and numbers of TOs to accomplish the unit mission. Maintain these files according to Chapter 10 of TO 00-5-2, *Technical Order Distribution System*.
- 2.3.7. Establish procedures within the flight to review selected processes and work quality enhancement issues affecting the maintenance function.
- 2.3.8. Use production inspectors, section and/or element chiefs and the QA office to help resolve problems. Quality process evaluations (QPE), observations, and quality assurance program (QAP) summaries are tools to be used for measuring the work center effectiveness.
- 2.3.9. Select sufficient qualified and experienced personnel (according to the prerequisites in **Table 2.1.**) to conduct production inspections. Select personnel to conduct condition inspections and IPIs, clear Red-X symbols on specific systems or types of tasks, certify serviceable assets and NRTS actions, and sign warning tags.
- 2.3.10. Ensure proper maintenance of documents for aircraft and other designated equipment.
- 2.3.11. Monitor the achievement of all applicable command maintenance standards.
- 2.3.12. (*Luke and Tyndall AFBs*) Ensure compliance with established combat sortie generation training requirements.

2.4. Production Superintendent. The production superintendent is the key component of maintenance production. He or she will be issued a vehicle and land mobile radio capable of communicating on all maintenance networks. Flight line production superintendents within the OG will report directly to squadron maintenance supervision. Production superintendents within the LG (if used) will be assigned to the maintenance squadron staff and report to the SMO and MS. These personnel are responsible for the unit's overall maintenance production and should not be assigned duties that restrict mobility and detract from managing production tasks. The production superintendent will:

- 2.4.1. Coordinate with flight chiefs to ensure sufficient personnel are scheduled to meet mission requirements.

2.4.2. In coordination with MOC and flight or section chiefs, ensure necessary on- and off-equipment maintenance specialists not under his or her span of control are dispatched in a timely manner to support maintenance requirements.

2.4.3. Direct maintenance personnel within his or her span of control in the accomplishment of the wing mission.

2.4.4. Be the POC for all decisions relating to maintenance production, resolve conflicts that cannot be resolved at lower levels, and coordinate with other supervisors to resolve conflicts that develop between separate sections or functional areas.

2.4.5. Attend maintenance planning meetings. Ensure changes and new requirements agreed on during the meetings are coordinated with the appropriate supervisors.

2.4.6. Coordinate with EM (to procure spare engines) and other functional areas when performing unscheduled engine changes.

2.4.7. Review aircraft in NMCS and PMCS status for timeliness of parts receipt and estimated delivery date. Evaluate the feasibility of cannibalization (AFI 21-103).

2.4.8. Ensure accomplishment of the requirements in the weekly and daily flying and maintenance schedules.

2.4.9. Based on mission needs, direct maintenance specialists to priority maintenance requirements within his or her span of control.

2.4.10. Direct the overall maintenance effort (flight line production superintendent) by directly controlling the maintenance actions of flight line technicians, dispatched specialists, and expeditors accomplishing maintenance tasks.

2.4.11. As applicable, authorize cannibalization actions and possess a current disaster preparedness grid map and copies of flight line-related emergency procedural checksheets ([Chapter 1](#)).

2.5. Flight Line Expediter. The flight line expediter may work for and report directly to the flight line production superintendent. The flight line expediter will control and monitor all maintenance in progress, coordinate all requirements, and update aircraft status in conjunction with the production superintendent and MOC. The expediter will operate from a radio-equipped vehicle and will normally be present on the flight line any time maintenance is being performed and during all aircraft launches and recoveries. In addition, the flight line expediter will:

2.5.1. Coordinate and report all job start-and-stop actions affecting aircraft status with the MOC.

2.5.2. Maintain the current status of work in progress on assigned aircraft and inform the MOC of status changes and delays in schedules.

2.5.3. Maintain a locally produced aircraft status board or similar computer product in the vehicle. As a minimum, the board or computer product must show the serial number, location, status, ETIC, configuration, and remarks for each assigned aircraft.

2.5.4. Request specialist and AGE support not assigned to the applicable sortie generation flight through the MOC.

2.5.5. Request additional support (such as POL and firetrucks) through the MOC.

2.5.6. Ensure the production superintendent and MOC (if applicable) are aware of the status of cannibalization actions.

2.5.7. Ensure engine oil samples are delivered to the oil analysis facility within the prescribed time limits shown in applicable technical data. The time limit for aircraft without prescribed limits is 4 hours. **NOTE:** Altus AFB is exempt from the 4-hour time limit.

2.6. Section Chief (Common Responsibilities). The section chief is responsible to the flight chief for managing, supervising, and training assigned personnel. Elements will be formed within sections when directed by this instruction or when the flight chief or commander determines the workload, section size, functional task complexity, or effective span of control dictates this division. When elements are formed, the element chief will be subordinate to the section chief, who delegates section duties and responsibilities to the element level (as appropriate). Specific section responsibilities for each functional area are prescribed in **Chapter 3**. In general, all section chiefs will:

2.6.1. Provide qualified technicians for both on- and off-equipment maintenance as required.

2.6.2. Ensure technicians use TOs according to TO 00-5-1, *Air Force Technical Order System*.

2.6.3. Ensure personnel know and use the proper procedures for identifying, recording, and clearing aerospace equipment discrepancies (to include repeat, recurring, and CND discrepancies).

2.6.4. Ensure maintenance of assigned test, measurement, and diagnostic equipment (TMDE) is accomplished (TO 33-1-27, *Logistic Support of Precision Measurement Equipment*).

2.6.5. Ensure technicians review AFTO 781-series forms before maintenance is performed on any aircraft.

2.6.6. Comply with AFI 21-103/AETC Sup 1 regarding aircraft equipment accountability.

2.6.7. Understand and enforce strict compliance with the TO 00-35D-54, *USAF Material Deficiency Reporting System*; TO 00-5-1; and TO 00-25-195, *Air Force Technical Order System Source, Maintenance and Recoverability Coding of Air Force Weapons, Systems, and Equipment*. Report deficiencies to the appropriate QA office.

2.6.8. Ensure equipment status and historical documents are maintained (TO 00-20-series) when this responsibility is delegated to the section.

2.6.9. Manage the deferred discrepancy program for assigned aerospace equipment (**Chapter 10**).

2.6.10. Ensure IPIs are completed and properly documented (**Chapter 4**).

2.6.11. Evaluate the scheduled workload and provide sufficient personnel to meet production requirements.

Section 2B—Procedures

2.7. Personnel Training. The section chief will be responsible for evaluating the qualifications of personnel and ensuring all required training is provided. Personnel will not be assigned tasks for which they are not qualified unless a fully qualified individual supervises them. The section chief will perform initial evaluations on newly assigned personnel and provide any required training. If unable to provide or arrange for the training, the section chief will inform the LTF. In addition, the section chief will:

- 2.7.1. Ensure all training schedules are met and inform the LTF when schedules cannot be met.
- 2.7.2. Ensure personnel are trained and certified to perform tasks requiring special qualification (AETCI 21-103 and/or the applicable contract).
- 2.7.3. Review new, revised, or changed TOs when received to determine whether additional training is necessary. Notify the LTF when additional training is necessary.
- 2.7.4. In conjunction with the LTF, ensure the automated training subsystem is kept current according to AFCSM 21-570, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Training Management, Users Manual*.
- 2.7.5. Ensure a graduate assessment survey (GAS) is used to provide positive and negative feedback to AETC and other commands that conduct education and training courses (AFI 36-2201 and AETCI 36-2201, *Training Evaluation*).

2.8. Safety. The section chief will manage the safety program within his or her work area and enforce safe work habits by using Air Force publications and AFOSH standards as references for the work center safety program (AFI 21-101). Personnel who use industrial equipment will be trained in the proper operation of the equipment and must follow the handling and storage procedures for hazardous material (paragraph 1.8.11. of this instruction). Personnel must also know the requirements of the FOD prevention program (AFI 21-101).

2.9. Quality of Maintenance. The section chief will be responsible for the effective management of assigned resources to produce quality maintenance. He or she will:

- 2.9.1. Ensure the quality of maintenance and qualifications of personnel by observing and by performing production and supervisory evaluations. Also, ensure subordinate supervisors are performing like evaluations (**Chapter 4**).
- 2.9.2. Ensure tools and equipment items are properly maintained, cared for, and calibrated.

2.10. Dispatch of In-Shop Technicians:

- 2.10.1. The section chief will dispatch qualified personnel as directed by the production superintendent. (This direction may come through the MOC, as appropriate.) Munitions activities will dispatch specialists through munitions control and dispatch.
- 2.10.2. The section or element chief will monitor the progress of jobs and location of personnel dispatched. AF Form 2430, **Specialist Dispatch Control Log**, which is a specialist planning chart, may be used in addition to CAMS to track work orders and personnel dispatched.
- 2.10.3. Dedicated in-shop personnel may be used to support the inspection function. If so, dedicated personnel will be controlled by the inspection function supervisor or production superintendent. Dedicated specialists will not be used for dispatch outside the inspection function without the concurrence of the inspection supervisor or production superintendent.
- 2.10.4. The section chief will ensure dispatch work orders in CAMS and other applicable information are provided to the technician upon dispatch to a job. The technician will report to the appropriate supervisor before beginning work and before leaving the job site. The section chief will ensure dispatched personnel take the necessary tools, equipment, and TOs to the work site. Technicians will

report job completion, ETIC slips, or problems to the flight line expediter, production superintendent, dock chief, or section chief, as applicable.

2.11. Repair Cycle Assets. Work center supervisors will monitor and control of repair cycle assets. They will also ensure repair cycle actions are properly documented, to include both on- and off-equipment maintenance turnarounds (TRN). See **Chapter 18** for specific procedures for repair cycle management.

2.12. Maintenance of Equipment. The section chief will ensure equipment is inspected, calibrated, repaired, properly stored, and secured. (**NOTE:** An automated AFTO Form 244, **System/Equipment Status Record**, may be used in place of a manual form.) Specifically, the section chief will ensure:

2.12.1. TMDE master inventory listings and schedules for TMDE due calibration are corrected and returned to the PMEL within 5 workdays. **NOTE:** Negative replies may be accomplished by telephone.

2.12.2. Equipment required to test or determine the serviceability of components is maintained and calibrated. Mockups, test stations, or locally built bench sets are maintained according to applicable TOs for the major components. Unless otherwise prohibited by TOs, test station mockup components used for subassembly maintenance and calibration need not have all covers, panels, locknuts, etc., secured. However, covers, panels, attaching clamps, screws, etc., must be readily available and subject to inspection at any time. Nonstocklisted parts or components of the mockup or set will be maintained by using the applicable general equipment TOs.

2.12.3. A record of inspection, servicing, and maintenance will be maintained on each piece of industrial type equipment (TO 34-1-3, *Inspection and Maintenance—Machinery and Shop Equipment*).

2.12.4. Equipment maintenance will include corrosion control treatment (TOs 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*, and 1-1-691, *Aircraft Weapons Systems Cleaning and Corrosion Control*).

2.12.5. Support will be requested through the maintenance operations function or production superintendent when equipment needs maintenance or repair is beyond the capability of the work center.

2.12.6. Portable and installed hoists will be visually inspected each day before use (AFOSH Standard 91-66, *General Industrial Operations*). Authorized personnel will tag defective hoists with AF Form 1492, **Warning Tag**. The following procedures apply:

2.12.6.1. Hoists and lifting devices will be inspected and weight tested according to AFOSH Standard 91-46, *Materials Handling and Storage Equipment*, military specification, or inspection data provided by the manufacturer. Lifting devices not covered by military specification or manufacturer's data will be inspected and weight tested according to the following general maintenance and inspection guidance: AFOSH Standard 91-46; TO 35D6-1-106, *Periodic and Maintenance Instr—Aircraft and Engine Slings (General) and Restraining Devices*; or TO 35-1-246WC-1, *Non-Powered Aerospace Ground Equipment Aircraft Servicing Equipment (FSC 1730) and Airfield Specialized Trucks and Trailers (FSC 1740)*.

2.12.6.2. AFTO Form 244 will be used to document special and periodic maintenance inspections, lubrications, and tests on non-real property-installed hoists.

2.12.6.3. Industrial shop machinery and equipment will be properly maintained according to TO 34-1-3.

2.13. Equipment Maintenance Documentation Procedures. The section chief will ensure AETC's equipment maintenance and documentation requirements are accomplished according to TO 00-20-5 and its AETC Sup 1.

2.14. Parts Ordering:

2.14.1. Sections should requisition parts via the CAMS/SBSS interface terminal. However, a telephone, radio, AF Form 2005, **Issue/Turn-in Request**, or over-the-counter request at a forward asset support training (FAST) warehouse may be used.

2.14.2. T-1, T-6, T-43, and C-21 CLS-furnished spares (such as COMBS) will be requisitioned according to the contract.

2.14.3. The section chief or a designated representative may maintain AF Form 2413, **Supply Control Log**.

2.14.4. Quick reference numbers should be used to reduce research and processing time and to minimize mistakes.

2.14.5. CAMS supply data will be verified daily, using the D04 daily document register. Priority due-outs (DUO) will be monitored daily, using the D18, Priority Monitor Report. DUOs will be monitored monthly, using the M30, Due-Out Validation Listing, or the optional R31 report.

2.15. Publications Familiarization. The section chief will ensure personnel are familiar with publications in their area of responsibility. The use of logbooks or charts to note compliance is not required.

2.16. Maintenance Data Reports. The section chief must know the reports that are available from the automated MMS and use the information from these reports in his or her day-to-day planning and utilization of assigned personnel and equipment. Contents of these reports are in 21-series AFCSMs, 00-20 TOs, and directives dealing with aircraft and missile data processing systems.

2.17. Maintenance Documentation Procedures. The section chief will ensure accurate documentation on all maintenance forms and documents and in the automated MMS. To ensure accuracy and completeness, the section chief will ensure work center and shift supervisors review (on a daily basis) the data entered into the system by personnel under their control (TO 00-20-2). See **Chapter 11** of this instruction for specific AETC guidance.

2.18. Deviations From Aircraft Towing Procedures. The OG commander will establish MOIs or wing instructions to specify local requirements or restrictions to aircraft towing procedures. All towing operations will be accomplished in accordance with AFI 11-218, AFOSH Standard 91-100, and applicable aircraft -2 TOs with the following exceptions:

2.18.1. A two-person tow team (driver and brake rider) is authorized for T-1, T-37, T-6, and T-38 aircraft during daylight hours. The two-person deviation will be permitted when:

2.18.1.1. The towing operation is under the supervision of a fully qualified towing supervisor who is also a qualified tow vehicle operator.

2.18.1.2. Towing is accomplished in established taxi lanes and parking areas with nosewheel guide lines specifically designed for the particular MDS aircraft.

2.18.2. The only special purpose vehicles authorized to tow aircraft are properly equipped MB-2, U-30, MB4, flight line tow tractor (bobtail), and 4,000-pound warehouse tow tractors (prime national stock number [NSN] 3930-01-007-0115). The use of general purpose vehicles (for example, pickup trucks, step vans, AGE tow tractors) to tow aircraft is not authorized. **EXCEPTION:** Properly equipped general purpose vehicles may be used to tow small trainer-type aircraft during emergency situations at auxiliary fields only.

2.19. Concurrent Servicing. To expedite aircraft turnaround, concurrent servicing procedures are authorized as per applicable aircraft -2 TO and TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*.

2.20. Rated Pilot Operational Checks. Certain maintenance actions require operational checks of the affected systems by a rated pilot for the first flight in addition to the TO-specified operational checks (AFI 21-103/AETC Sup 1). Maintenance actions requiring a rated pilot for the first flight will either be in an AETC supplement to the aerospace equipment -2 or -6 TO or in a local MOI or wing instruction. Enter a red dash on the AFTO Form 781A, **Maintenance Discrepancy and Work Document**, and update the automated MMS with the following statement: "Aircraft restricted to a rated pilot for the first flight due to [state the maintenance action]." Inform the MOC, through the production superintendent, of the restriction.

Chapter 3

MAINTENANCE PRODUCTION FUNCTIONS

Section 3A—Specific Responsibilities

3.1. Maintenance Functions. Maintenance functions are defined as the specific responsibilities and areas of expertise that apply to the sections and/or elements within a particular flight. These functions may perform both on- and off-equipment maintenance, as applicable. Common responsibilities of flight chiefs and section or element chiefs are described in [Chapter 2](#); specific functional responsibilities are described in this chapter. The terms and responsibilities associated with the functions identified in this chapter may differ or may not be applicable to all AETC units, based on unit size, mission, and MDS assigned. Civil service and contract maintenance organizations will organize according to their applicable SOW or PWS.

Section 3B—Operation Squadron Sortie Generation Flight

3.2. Sortie Generation Flight. The sortie generation flight will consist of crew chiefs, specialists (including engine support), maintenance debrief ([Chapter 15](#)), and weapons functions. If on-equipment pneudraulics specialists are assigned, they will be part of the specialist function. The crew chief and specialist functions may be combined at the discretion of the operations squadron commander.

3.3. Crew Chief Function. This function will provide on-equipment maintenance (scheduled and unscheduled) for all assigned aircraft. (The following responsibilities primarily pertain to crew chiefs.) The crew chief will:

- 3.3.1. Accomplish aircraft ground handling, to include towing, launching, recovery, and jacking.
- 3.3.2. Accomplish aircraft inspections, to include preflight, thru-flight, basic postflight inspection (BPO), combined preflight/BPO, home station check (HSC), acceptance and transfer inspections, and hourly postflight (HPO) according to TO 00-20-5/AETC Sup 1 and the aircrafts -2 and -6 TOs.
- 3.3.3. Accomplish aircraft servicing, to include fuel, oil, hydraulic fluid, gaseous and liquid oxygen, nitrogen, and dry air.
- 3.3.4. Ensure deferred discrepancies are entered on AFTO Form 781K, **Aerospace Vehicle Inspection, Engine Data, Calendar Item Inspection and Delayed Discrepancy Document**, and input to either the awaiting maintenance (AWM) or awaiting parts (AWP) deferred discrepancy file, as applicable.
- 3.3.5. Maintain and transcribe aircraft forms as required.
- 3.3.6. Accomplish aircraft documentation reviews (AFI 21-101).

3.4. Specialist Function. The following responsibilities primarily pertain to specialists. The specialist function will:

- 3.4.1. Maintain on-equipment communication systems, navigation systems, electronic warfare systems, instruments, flight controls, airborne video tape recorder (AVTR) system, and fire control radar. Use flight line test equipment, remove and replace LRUs, troubleshoot, analyze in-flight fault data,

boresite, encode equipment, reprogram LRUs, complete TCTOs, and safeguard classified equipment, encoding materials, and devices. Ensure LANTIRN pods are transferred to the sensor shop when required for intermediate-level repairs. Units possessing F-15 and F-16 aircraft will perform 90-day operational checkout of radar warning receiver (RWR) systems on assigned aircraft. This requirement will be tracked in the automated MMS as scheduled maintenance.

3.4.2. (*Fighter units*) Establish an IFF mode IV MOI which prescribes the testing of 70 percent of assigned aircraft per month (TO 00-20-5).

3.4.3. Perform on-equipment electro-environmental maintenance.

3.5. Engine Support Function. This function will perform troubleshooting, removal, repair, installation, inspection, and operational checks of installed aircraft engines and propulsion system components. The function will manage the on-equipment aspects of the engine removal program and ensure a sufficient number of people are qualified to operate installed engines. (**NOTE:** Contract or civil service activities may separate or align engine support to other functions; for example, aero repair, flight line, or propulsion.) The engine support function will:

3.5.1. Establish trim teams when necessary.

3.5.2. Determine needed tools and bench stock.

3.5.3. Establish scheduled maintenance crews to accomplish inspections and clear discrepancies.

3.5.4. Ensure torque wrenches and rig kits are properly maintained.

3.5.5. Ensure CAMS event IDs with a Y in the AHE indicator field are initiated for engines removed for maintenance or inspection and maintained for each installed engine. For engine maintenance actions accomplished on transient aircraft, notify the BEM.

3.5.6. Ensure personnel inform the EM function and oil analysis program (OAP) laboratories of engine removal.

3.5.7. Ensure personnel chemically clean and water wash installed engines as required by lead command directives or equipment TOs. When required, enter and maintain frequencies of treatment and times in the automated MMS and AFTO Form 781K.

3.5.8. Coordinate with the EM and propulsion functions concerning the engine removal program and the option to make minor repairs or perform PE on an engine removed for unscheduled maintenance.

3.5.9. Order parts for installed engines and inform the flight line expediter as to their document numbers and status.

3.5.10. Ensure technicians document the removal and installation of serially controlled components (00-20 TOs) and update the automated MMS.

3.5.11. Ensure intermediate-level maintenance of 2LM engines are limited to changing and/or repairing the following:

3.5.11.1. TF33--First and second stage fan assembly, inlet guide vane (IGV) case, fan stator assembly, #1 bearing and sump area, #6 scavenge pump and oil tubes, accessory drive housing, and all external mounted quick engine change (QEC) kit and basic engine components (including thrust reverse assembly).

3.5.11.2. TF39--All externally mounted QEC kit and basic engine components (except the gear-box).

3.6. Crew Chief and Specialist Functions. (The following responsibilities are common to both crew chief and specialist functions, regardless of whether or not they are combined.) The crew chief and specialist functions will:

- 3.6.1. Ensure TOs, maintenance checklists, inspection workcards, and other applicable directives are used to accomplish maintenance actions and inspections.
- 3.6.2. Ensure flight line on-equipment maintenance operations are accomplished according to the daily portion of the weekly schedule.
- 3.6.3. Verify maintenance forms and automated MMS inputs for accuracy and completeness.
- 3.6.4. Ensure accuracy and completeness of AFTO 781-series forms (00-20 TOs).
- 3.6.5. When a deferred discrepancy is cleared, ensure it is correctly documented on AFTO 781-series form and updated in the automated MMS.
- 3.6.6. Ensure completeness and accuracy of automated products that replace forms.
- 3.6.7. Review monthly plans and weekly maintenance schedules and make necessary resource adjustments.
- 3.6.8. Inform the flight line expediter of changes to aircraft status.
- 3.6.9. Ensure personnel verify the status of the aircraft before beginning any maintenance.
- 3.6.10. Order required parts. Ensure document numbers are accurately entered in AFTO 781-series forms and the automated MMS and inform the flight line expediter of document numbers for parts ordered.
- 3.6.11. Ensure safety requirements are met.
- 3.6.12. Run and motor engines for systems checks when authorized and qualified (AFI 11-218/AETC Sup 1 and AETCI 21-103).
- 3.6.13. Accurately document maintenance and inspection actions for input into the automated MMS.
- 3.6.14. Immediately enter a Red-X symbol on AFTO Form 781A when notified that the OAP laboratory recommends grounding or requests a red cap sample be taken. The Red-X symbol will not be cleared until the subsequent OAP laboratory analysis is complete and recommendations made.
- 3.6.15. Participate in or perform aircrew debriefing ([Chapter 15](#)).

| 3.7. Overview of the Weapons Function:

- 3.7.1. The weapons function will load and unload munitions and weapons in support of daily and contingency operations. The function will perform on-equipment weapons related scheduled and unscheduled maintenance.
- 3.7.2. The weapons functions at Luke and Tyndall AFBs will be organized as weapons sections with loading and maintenance elements. These functions will be responsible for weapons section chief, weapons loading element, and weapons maintenance element responsibilities. They will not be

responsible for managing the weapons task qualification program (paragraph 3.15.) or performing any armament function responsibilities (paragraph 3.73.).

3.7.3. At bases other than Luke and Tyndall, the weapons function responsibilities will include weapons section chief, weapons maintenance, weapons loading, management of the weapons task qualification program, and all applicable armament responsibilities (Section 3K).

3.7.4. The responsibilities identified in paragraphs 3.8. through 3.15. and Section 3K are in addition to applicable flight chief and section chief responsibilities outlined in Chapter 2. Only military units will be bound to the organizational requirements of this instruction; contract and civil service units will be organized according to their respective contract.

3.8. Weapons Section Chief (at Luke and Tyndall AFBs). The weapons section chief at Luke and Tyndall AFBs will:

3.8.1. Recommend the most qualified load crewmembers be assigned as crewmembers.

3.8.2. Identify load crews for primary and alternate mobility positions, as applicable.

3.8.3. Ensure a loading checklist for each PM and SM is on hand for each assigned load crew.

3.8.4. Route each AFTO Form 22, **Technical Order Improvement Report and Reply**, for -33 TOs to weapons standardization (WS) for review.

3.8.5. Ensure individual consolidated toolkits (CTK) are set up for each load crew designated to support unit taskings.

3.8.6. Designate weapons expeditors. (Weapons expeditors will be assigned to the weapons section and responsible to the weapons section chief.) Weapons expeditors will:

3.8.6.1. Be responsible for all armament systems maintenance and loading operations. Weapons expeditors will respond to maintenance priorities established by the flight line expeditor and production superintendent.

3.8.6.2. Operate from a vehicle equipped with a portable or mobile radio, if required.

3.8.6.3. Supervise and monitor on-equipment armament systems maintenance and weapons loading operations.

3.8.6.4. Inform the flight line expeditor of all start and stop times, status changes, delays, and extensions.

3.8.7. Inspect a random sampling of weapons test and SE for serviceability quarterly and initiate corrective action as required. These quarterly inspections should include all items assigned. Document inspection results for followup action or referral as necessary.

3.8.8. Monitor weapons release reliability rates and gun fire out rates and provide monthly performance levels to the wing weapons manager. Take appropriate corrective action and inform the weapons manager if rates fall below command performance levels (Chapter 23).

3.8.9. Provide the wing weapons manager with armament tester and equipment status quarterly per the requirements identified in paragraph 23.3.

3.8.10. Forward graduate assessment surveys to the wing weapons manager for review.

3.9. Weapons Section Chief (at Other Than Luke and Tyndall AFBs). The weapons section chief will:

3.9.1. Monitor weapons release reliability rates and take appropriate corrective action when rates fall below command performance levels (**Chapter 23**). Provide monthly performance levels (quarterly for AT-38 units) to the QA office for inclusion in the QAP summary and, if required, to the analysis function for inclusion in the monthly maintenance summaries.

3.9.2. Develop a wing instruction or MOI, in coordination with the explosive safety officer and airfield management, for launch and recovery of explosives-loaded aircraft (AFI 91-201 and AFI 91-202). The wing instruction or MOI will include the requirements to arm and de-arm munitions loaded on aircraft only in approved areas; normally safe guns and rockets in the de-arm area prior to aircraft returning to the parking area; inspect and safe unexpended munitions prior to the aircraft returning to the parking area; and isolate aircraft with unsafe or hung munitions until munitions are safed.

3.9.3. Develop, administer, and manage a weapons academic training program. (Initial and recurring weapons academic training is required for all unit personnel performing in the weapons section or personnel outside the weapons section who maintain specific weapons task qualification.)

3.9.3.1. Ensure initial academic training is completed prior to starting practical training. Also ensure recurring academic training is given annually.

3.9.3.2. Coordinate training requirements and course control documents with the logistics training flight. Ensure course control documents are tailored to unit needs. As a minimum, courses will include publications, safety, security, aircraft familiarization, munitions, AGE and SE familiarization, test equipment, and special tools and handling equipment. **NOTE:** Weapons academic training may fulfill the requirements for explosive safety training if the requirements of AFI 91-202 are met.

3.9.4. Establish and manage a weapons task qualification training program (paragraph **3.15**).

3.9.5. Designate weapons task qualification trainers (paragraph **3.15**).

3.9.6. Follow the guidance in paragraph **3.8** if weapons expeditors are used.

3.9.7. Establish local procedures to control impulse cartridges from transient aircraft. Arming, de-arming, and munitions loading or unloading operations on transient aircraft may be performed by Air Force specialty code (AFSC) 2W1X1 personnel or civilian equivalents who are qualified on the aircraft and munition. OG or LG commanders may direct AFSC 2W1X1 personnel (minimum 5-skill level and explosive safety qualified) to arm or de-arm an aircraft on which they are not qualified if technical data is available. The aircrew should be available for consultation on aircraft peculiarities. If these requirements cannot be met, request help from HQ AETC/LGMW.

3.10. Weapons Section Chief (All Bases). The weapons section chief at all bases will:

3.10.1. Ensure aircraft -6 TO armament inspections are accomplished. At least weekly, print and review job flow inquiries to ensure required inspections are being scheduled and completed. Maintain these products on file.

3.10.2. Track configuration of aircraft, suspension equipment, and weapons.

- 3.10.3. Ensure the flight line expediter is informed of all start and stop times, status changes, delays, and extensions.
- 3.10.4. Ensure local munitions expenditure tracking procedures meet the following minimum requirements:
- 3.10.4.1. AF Forms 2434, **Munitions Configuration and Expenditure Document**, will be maintained showing all aircraft configured and loaded to release or fire munitions. Record by serial number and location (or position) all armament-related alternate mission equipment (AME) or SE from which munitions are expended or rounds fired and record the action in the automated MMS (for example, rounds totalization, 30 days after fire, or 100 firing inspections). Equipment serial numbers for items not requiring records action need not be recorded. An AF Form 2434 is not required for aircraft loaded for alert or exercises not involving flight.
 - 3.10.4.2. Locally developed forms or products may be used if they are coordinated through the munitions activity and approved by the OG and LG commanders.
 - 3.10.4.3. A reconciliation of expenditures will be accomplished with the munitions activity at the end of the flying day (the first duty day *after* the flying day for Kirtland AFB). The munitions activity will be provided a copy of the AF Form 2434. After the reconciliation, the AF Form 2434 will be used to update inspection cycles of AME, normally installed equipment (NIE), and SE as applicable. When expenditures occur, a copy will be provided to the armament flight and/or the squadron PS&D section for update of applicable inspection intervals and equipment historical records. The documentation action block will be annotated when entries are made on item historical documents.
- 3.10.5. Coordinate with the MOC for the delivery and pickup of munitions items as applicable.
- 3.10.6. Coordinate the accomplishment of all preplanned and unscheduled maintenance requirements and inspections with the flight line expediter.
- 3.10.7. Monitor the safety of flight line weapons operations. Ensure supervisory postload and maintenance inspections are performed.
- 3.10.8. Develop master contents listings for all weapons-related CTKs (**Chapter 19**).
- 3.10.9. Determine the number and type of tool kits required. Ensure required technical data is available in sufficient quantities. Ensure required test equipment, special tools, and equipment are available and serviceable (**Chapter 19**).
- 3.10.10. Ensure locally manufactured equipment (LME) not included in technical data is approved for use (paragraph **3.82**).
- 3.10.11. Designate munitions account custodians for impulse cartridges, dummy ammunition, etc., if applicable. Ensure storage facilities are maintained according to AFI 91-201 and AFI 31-101, *The Air Force Installation Security Program*.
- 3.10.12. Coordinate with the munitions activity on the establishment of a wing instruction for accountability of munitions identified to meet flight line requirements.
- 3.10.13. Ensure flying schedule changes impacting the munitions activity are coordinated.
- 3.10.14. Track F-16 acceleration monitor assemblies by aircraft tail number and position installed.

3.10.15. Ensure the use of AF Form 2430, **Specialist Dispatch Control Log** (or a locally produced form or product), to dispatch and track armament systems maintenance and loading operations. Ensure serial numbers of AME or NIE installed or removed on aircraft are recorded. Ensure completed forms or products are kept on file for at least 90 days.

3.10.16. Ensure proper job data documentation (JDD) procedures are used to install and remove all NIE in the automated MMS. Proper JDD procedures are interpreted as creating and clearing jobs in the automated MMS.

3.10.17. Ensure documentation in the automated MMS for AME routinely installed for periods longer than 30 days (such as the F-16 wingtip launchers and wing or center line pylons) is accomplished using the appropriate JDD. All other AME may be installed and removed using non-JDD procedures (CAMS screens 45 and 46) if the actions are documented on AF Form 2430 or a similar product. **NOTE:** At Luke and Tyndall AFBs, the wing weapons manager will determine AME to be documented using JDD procedures.

3.10.18. Designate select supervisors authorized to use non-JDD procedures (CAMS screens 45 and 46) for installing and removing AME in the automated MMS. The quantity of personnel authorized to use these screens must be limited to the minimal number of supervisors needed to ensure timely documentation.

3.11. Weapons Loading Element Chief (at Luke and Tyndall AFBs). The weapons loading element chief at Luke and Tyndall AFBs will:

3.11.1. In coordination with the WS superintendent, ensure load training aircraft requirements and load crew proficiency evaluation schedules are developed. These schedules will be included in the weekly and monthly maintenance plans. Training aircraft will be properly configured to support load-training requirements prior to scheduled training sessions.

3.11.2. Designate load crew chiefs. Load crew chiefs must be NCOs with a minimum of AFSC 2W151. (**NOTE:** Senior airmen may be load crew chiefs when unit manning dictates, but they must be designated in writing by the squadron maintenance officer and coordinated with the wing weapons manager.) Load crew chiefs will:

3.11.2.1. Control all actions concerning the aircraft during loading and unloading, except ICTs.

3.11.2.2. Ensure no maintenance is performed on the aircraft that interferes with normal loading or unloading operations.

3.11.2.3. Ensure required safety equipment is available, serviceable, and (if applicable) installed.

3.11.3. Ensure load crews are certified before loading conventional munitions requiring certification (**Chapter 23**) unless crews are under the direct supervision of at least two certifying officials.

3.11.4. Maintain load crew integrity during training and evaluations to the maximum extent possible.

3.11.5. Maintain a visual aid or automated product depicting the current status of assigned load crews and members.

3.11.6. Ensure load crew certification records or automated products are sent with load crews to TDY locations if loading tasks are to be performed.

3.11.7. Ensure load crews are not certified on more than two types of aircraft, except during munitions or aircraft test programs.

3.11.8. Ensure no more than one load crew is used to accomplish ICTs or certified loading or unloading tasks.

3.12. Weapons Loading Responsibilities (at Other Than Luke and Tyndall AFBs). Ensure personnel receive required prerequisite training prior to entering initial load crew training or weapons task qualification training (for example, cockpit familiarization, fire extinguisher, and AGE).

3.13. Weapons Maintenance Element Chief (at Luke and Tyndall AFBs). Maintain qualification on designated unit weapons task qualifications. Maintenance personnel will not normally certify as load crewmembers unless unit manning dictates.

3.14. Weapons Maintenance Responsibilities (All Bases). Weapons maintenance at all bases will:

3.14.1. Track NIE and assigned in-use AME by aircraft tail number and position installed in the automated MMS.

3.14.2. Perform the on-equipment portions of aircraft armament equipment transfer and acceptance inspections. Inspections will include a parts integrity inspection (to ensure equipment serial numbers match records received) and a complete electrical and mechanical checkout of every installed NIE and AME. The armament flight will review equipment historical records. **NOTE:** Installed equipment (NIE or AME) need not be removed for acceptance or transfer inspections unless a malfunction, defect, overdue inspection, or a discrepancy requiring removal is detected.

3.14.3. Install and remove AME and NIE to facilitate other maintenance or for repair actions, including acceptance, transfer, phase, and HPO inspections.

3.14.4. Perform on-equipment -6 inspections and aircraft armament systems functional checks on in-use AME and NIE.

3.14.5. Perform boresight inspections on aircraft guns and gun pods.

3.14.6. Perform on-equipment TCTOs.

3.14.7. Perform aircraft troubleshooting and repair actions. Ensure appropriate followup actions are accomplished for all armament systems malfunctions. Monitor actions taken by supporting agencies on dispensers, suspension equipment, training munitions, etc., that were involved with specific system malfunctions.

3.14.8. Initiate cannibalization documentation (**Chapter 16**) when installed equipment, with inspection requirements aligned to phase or flying hours (for example, pylons, bomb racks, and launchers), is removed and installed on another aircraft.

3.15. Weapons Task Qualification Program. A weapons task qualification is a munitions-related task not requiring certification.

3.15.1. Personnel will receive initial and annual recurring training for this type of operation. At Luke and Tyndall AFBs, WS is responsible for managing the weapons task qualification program; at all other bases, the weapons section chief is responsible for managing the program. WS or the weapons

section chief, as applicable, will provide all academic and practical training, including explosive safety peculiar to weapons tasks.

3.15.2. Initial training will be conducted on properly configured aircraft suitable for use, and no other maintenance will be performed on the aircraft during training. Annual recurring training may be conducted during normal flight line operations. Training will be documented in the weapons load crew management program (WLCMP) identified in **Chapter 23** or the automated MMS. Weapons task qualification trainers will be fully qualified AFSCs 2W151 or civilian equivalents. **NOTE:** Each weapons task qualification item uses a separate course code.

3.15.3. Personnel will be trained and qualified on the following items during each weapons task qualification:

3.15.3.1. Using applicable checklists, performing applicable functional and/or stray voltage checks, and performing delayed flight, alert, or immediately prior to launch procedures, if applicable.

3.15.3.2. Using, installing, and removing weapons system safety devices; using, installing, and removing munitions item safety requirements and devices; knowing the location of the weapons system explosive items used to jettison and/or release external stores; and knowing the location and safe configuration of cockpit armament switches.

3.15.4. The following minimum personnel requirements apply during training and performance of each weapons task qualification:

3.15.4.1. Two or more qualified persons (at least one in AFSC 2W1X1 [or civilian equivalent] functioning as the supervisor) may install and remove impulse cartridges (if the task is not done as a part of a loading operation that requires certification) and load or unload BDU-33 and MK-106 practice bombs.

3.15.4.2. Two or more qualified persons in any maintenance AFSC or civilian equivalent may install and remove chaff and flare magazines and perform portions of the conventional loading checklist that pertain to delayed flight or alert, immediately prior to launch, and safing procedures. **NOTE:** For munitions requiring certification, both persons must be AFSC 2W1X1 except during actual or exercise contingency operations.

3.15.4.3. A minimum of three qualified personnel in any maintenance AFSC or civilian equivalent may perform munitions and/or missile isolation procedures to facilitate other maintenance and load and unload captive AIM-9 training missiles or acceleration monitor assemblies.

3.15.4.4. Only one qualified person in any AFSC is required to perform (immediately prior to launch) missile isolation and safing procedures on captive training missiles (CATM) 7, 9, and 120.

3.15.4.5. Two or more persons in AFSC 2W1X1 or civilian equivalent are required to load or unload ammunition in internal and external gun systems, BDU-50 practice bombs, 2.75 inch rockets, and TGM-65 training missiles. **NOTE:** These tasks require three persons (AFSC 2W1X1 or civilian equivalents).

Section 3C—Operation Squadron Sortie Support Flight

3.16. Sortie Support Flight. The sortie support flight consists of the functions of inspection, tool, and supply (**Chapter 17**). These functions may be combined at the discretion of the operations squadron com-

mander. (**NOTE:** For large aircraft, the inspection function may be located in the LG maintenance squadron maintenance flight according to AFI 38-101.) The flight will maintain, control, and store aircraft -21 equipment according to AFI 21-103 and, as applicable, report aircraft configuration to the flight line expeditor. (This refers to airlift, cargo, and tanker aircraft.) In addition, the sortie support flight will:

- 3.16.1. Implement and manage the tool management program (**Chapter 19**).
- 3.16.2. Manage assigned bench stocks (**Chapter 17**).

3.17. Inspection Function. The inspection function may be referred to as a PE, phase, ISO, or scheduled maintenance function. It may be organized into docks, depending on the size of the organization and types and numbers of aircraft assigned. The inspection function will:

- 3.17.1. Establish a sufficient capability (manpower, equipment, etc.) to perform scheduled inspections.
- 3.17.2. Ensure assigned personnel are qualified. When proficiency is developed in one inspection area, training should be given in another area so the technician is qualified in as many areas of the aircraft as possible.
- 3.17.3. Coordinate with the P&S function to ensure a smooth inspection flow consistent with the maintenance plan.
- 3.17.4. Ensure appropriate management tools (such as inspection flow plans, specialist scheduling charts, and inspection workcard controls) are established, implemented, and standardized.
- 3.17.5. Investigate delays, problems, and additional inspection requirements.
- 3.17.6. Ensure TOs, workcards, hand tools, special tools, bench stock and petroleum products are available to accomplish the inspection tasks.

3.18. Inspection Management. Inspection management consists of preinspection, look, fix, and postinspection phases as follows:

- 3.18.1. The preinspection phase consists of a preinspection meeting (**Chapter 7**), aircraft preparation, and inspection area preparation.
- 3.18.2. The look phase follows the preinspection phase and consists of conducting an inspection according to the applicable -6 TO. Document discrepancies according to TO 00-20-5. Document Red-X discrepancies in the automated MMS and the aircraft's AFTO Form 781A. All inspection workcards not accomplished during the look phase will also be entered into the automated MMS system or AFTO Form 781A. **NOTE:** The inspection dock supervisor may elect to perform applicable -6 operational checks in conjunction with the look or fix phase as long as these checks do not interfere with the inspection phase.)
- 3.18.3. The fix phase may be started before the look phase ends, but should not interfere with it. The fix phase is composed of maintenance actions to correct discrepancies found during the look phase and to perform maintenance determined necessary during the preinspection phase. On completion of the fix phase, all uncompleted discrepancies will be entered in the AFTO 781-series forms.
- 3.18.4. The postinspection phase normally starts after the fix phase ends. It includes:

- 3.18.4.1. Performing operational checks according to the applicable -6 inspection workcards and TOs.
- 3.18.4.2. Preparing the aircraft for an FCF as necessary.
- 3.18.4.3. Correcting discrepancies found during postinspection operational checks after an FCF.

3.19. Parts Forecasting. To minimize delays in inspection dock flow, components that are usually replaced (other than items located on bench stock) may be forecasted. The following procedures apply:

- 3.19.1. The inspection function may compile a list of components for each type of PE (major or minor), phase, or ISO on each type aircraft.
- 3.19.2. Using urgency justification code (UJC) AZ, the inspection function will order necessary items up to 90 days before the aircraft's projected PE, phase, or ISO due date.
- 3.19.3. Parts received will be dedicated to the aircraft and will be stored and controlled within the inspection function. However, maintenance managers may use the parts to satisfy impending mission capability MICAP conditions.
- 3.19.4. Items removed and replaced will be processed through the repair cycle, using normal due-in-from-maintenance (DIFM) and turn-in procedures.

3.20. Inspection Dock Supervisor. The inspection dock supervisor is responsible to the inspection function (operations squadron sortie support flight or maintenance squadron maintenance flight) for the management, supervision, and training of assigned personnel. The inspection dock supervisor will:

- 3.20.1. Ensure the necessary TOs and inspection workcards are available and work unit code (WUC) manuals and checklists are current and properly maintained. (In coordination with the P&S function, the inspection function will ensure changes to inspection workcards are updated on the JML.)
- 3.20.2. Ensure personnel are trained to operate industrial-type equipment, hoists, hangar doors, and AGE necessary to do their job.
- 3.20.3. Ensure the inspection area is adequately prepared; that is, AGE, workstands, supplies, and equipment needed to inspect, repair, lubricate, or service are available and ready for use.
- 3.20.4. Ensure the needed parts for the aircraft are ordered and inform the MOC of all parts backordered UJC 1A or JA (MICAP reportable). (**NOTE:** The use of AF Form 2413 is optional when an automated MMS is available.) Daily reconcile the D04 with CAMS (TRIC SCL) or AF Form 2413, as applicable.
- 3.20.5. Document discrepancies found during the inspection (00-20 TOs and the automated MMS).
- 3.20.6. Ensure PS&D functions have a record of inspection documents when the inspection is completed (**Chapter 5**).
- 3.20.7. Inform the post-dock function of backordered parts and the status of maintenance required on the aircraft before it can be released.
- 3.20.8. Ensure components are tagged with an AFTO Form 350 when they are removed from the aircraft. As a minimum, include the aircraft ID, component position, and serial number (if serially controlled). To prevent invalidating historical records, ensure serially controlled components are reinstalled on the same aircraft and position from which they were removed. (**EXCEPTION:** If it is

absolutely necessary to install serially controlled components in a different position, notify the documentation function for records update.) When it is not practical to tag items such as access panels, an AFTO Form 350 or other suitable means of identification may be used if the items are identified and kept together in a secure storage area and/or rack. (The applicable storage area and/or rack must have the aircraft serial number clearly displayed.)

3.21. Document Control. To ensure control of specialists and parts to complete the inspection, corresponding maintenance documents must be controlled. The inspection function will ensure maintenance actions are correctly documented. It will review the completed automated MMS entries and AFTO 781-series forms before forwarding them for posting to historical files. The inspection function will monitor the status of all priority dueout parts with the D18, Priority Monitor Report, and ensure DIFM assets are properly processed (**Chapter 18**).

3.22. Specialist Management. The inspection function must plan to use specialists effectively. The function will establish procedures to plan, coordinate, and direct efforts. Flowcharts may be used to help control inspection personnel and supporting specialists. Specialists may be assigned to the inspection function.

3.23. Inspection Procedures. The following aircraft inspection procedures apply:

3.23.1. The in-dock function will:

3.23.1.1. Receive the inspection package, which includes an original AF Form 2410, **Inspection/TCTO Planning Checklist**; the automated MMS listing of look phase requirements and TCIs (optional); and CAD/PAD verification TRIC transfer report (TRE) or planning requirement (PRA) when required.

3.23.1.2. Initiate a separate AF Form 2413 for each aircraft (optional).

3.23.1.3. Initiate the inspection at the scheduled time.

3.23.1.4. Ensure the automated MMS system work order status is accurate. **NOTE:** Dock chiefs will use AETC Form 246, **Inspection Workcard Control** (or a locally approved product), and update the listing daily when the automated MMS is unavailable. This allows inspection requirements and automated MMS data to be maintained when the system is not operational.

3.23.1.5. Ensure immediate annotation of Red-X conditions on AFTO Form 781A (TO 00-20-5).

3.23.1.6. Monitor repair cycle assets and ensure proper completion of AFTO Form 350. Enter the need by time and date in Part 1 of AFTO Form 350 for removal, repair, and reinstallation of assets. Ensure assets are forwarded into the repair cycle in a timely manner (**Chapter 18**).

3.23.1.7. Input work orders into the automated MMS for scheduled specialist support and maintenance requirements.

3.23.1.8. When the in-dock inspection is complete, assemble and deliver the in-dock inspection work package (including AF Form 2410 and TRIC QMS listing or AETC Form 246) to the P&S function.

3.23.1.9. Turn over the aircraft, aircraft forms, and AF Form 2413 (if used) to the post-dock function.

3.23.1.10. Provide the post-dock function with aircraft forms and discrepancies not corrected during the in-dock inspection, including any required operational checks.

3.23.2. The post-dock function will:

3.23.2.1. Receive AF Form 2413 (if used) and aircraft forms from the in-dock function and complete the post-dock workcards.

3.23.2.2. Verify completion of post-dock inspection requirements. Pull (complete) forms and transcribe open discrepancies to appropriate AFTO 781-series forms. Prepare aircraft for FCF when required.

3.23.2.3. Ensure aircraft forms reviews are completed prior to and after FCF flights (**Chapter 4**).

3.23.2.4. On completion of the FCF:

3.23.2.4.1. Ensure inspection requirements have been completed and transcribe or transfer open discrepancies to the appropriate AFTO 781-series forms.

3.23.2.4.2. Ensure work orders have been closed or deferred in the automated MMS.

3.23.2.4.3. Accomplish a document review in coordination with the P&S function. Ensure the aircraft's current AFTO 781-series forms are available during this time.

3.23.2.5. Returns aircraft, aircraft forms, and AF Form 2413 (if used) to the flight line function.

Section 3D—LG Maintenance Squadron's Maintenance Flight

3.24. Overview. The maintenance flight will consist of the transient alert (paragraph **3.25.**), aero repair (AR) (paragraph **3.30.**), and wheel and tire functions (paragraph **3.31.**). The aero repair function and wheel and tire function may be combined at the discretion of the maintenance squadron commander.

3.25. Transient Alert Function. This function will provide maintenance for transient aircraft. Specifically, the transient alert function will:

3.25.1. Ensure required maintenance and scheduled inspections are accomplished.

3.25.2. Take oil samples and processes DD Form 2026, **Oil Analysis Record** (TO 33-1-37, *Joint Oil Analysis Program Laboratory Manual*).

3.25.3. Perform overall visual inspection of airframe and components according to applicable TOs.

3.25.4. Notify base operations dispatch when aircraft are ready for flight crew.

3.25.5. Assist aircrew in preflight and engine starting checklist.

3.25.6. Perform end-of-runway inspections as required (TO 00-20-5).

3.25.7. Ensure deceleration chutes are retrieved for assigned, transient, and tenant unit aircraft and taken to the survival equipment function for repacking. If additional manning is needed to support tenant units, resolve the problem through a host-tenant support agreement.

3.25.8. Ensure proper maintenance and reimbursement documentation is accomplished (TOs 00-20-2 and 00-20-5). AF Form 726, **Transient Aircraft Service Record**, or AFTO Form 349, **Maintenance Data Collection Record**, may be used to document maintenance servicing requirements and necessary billing information.

3.25.9. Ensure TOs needed for the function are properly maintained. The scope and depth of the file are based on current mission requirements. As a minimum, maintain the appropriate TOs for aircraft that can be expected to transit the function on a regular basis.

3.26. Transient Aircraft Engine Operation. Transient alert personnel authorized to perform engine runs must be qualified according to AFI 11-218/AETC Sup 1. When a requirement exists to run an engine, but base-assigned maintenance personnel are not qualified, a qualified aircrew member will accomplish the engine run. When a qualified aircrew member is not available, request assistance (TO 00-20-1).

3.27. EID Number Register. Transient alert will initiate AF Form 861, **Base/Transient Job Control Number Register**, for transient aircraft. Each aircraft may be assigned a single EID for all support general work performed by the transient maintenance function. Contract transient alert activities will forward completed AF Forms 861 to the QAE monthly. The QAE will forward completed forms to the applicable contracting officer managing the transient alert for inclusion in the contract file. Blue-suit transient alert activities will maintain their own transient alert files for at least 1 year. (The AF Form 861 will be disposed of according to AFMAN 37-139.) The transient alert function will:

3.27.1. Close out support-general EIDs daily.

3.27.2. Use the same last four digits on subsequent days for the same aircraft.

3.27.3. Use a separate EID for each discrepancy not support general.

3.28. Transient Aircraft Support:

3.28.1. The MOC will maintain the status and location of transient aircraft requiring unscheduled support. The status may be maintained in an automated system, on a status board or sheet, or by other suitable means. When a transient aircraft experiences a mission-limiting condition, the MOC will notify the owning unit to jointly establish mission need and negotiate repair priority.

3.28.2. If the capability exists (possessing like aircraft), the unit will provide the necessary support required to return the aircraft to mission capable status based on mission need. This policy also applies to nonduty hours and weekends. The unit possessing the aircraft will report the aircraft status (AFI 21-103). Units receiving transient aircraft will develop procedures to ensure mission-limiting status information is provided to the possessing unit. Maintenance and documentation procedures for transient aircraft are prescribed in TO 00-20-5. See paragraph 1.21. for procedures for recovery of off-station, cross-country aircraft.

3.29. Transient Aircraft Specialist Support. Transient alert will inform the MOC when transient aircraft status changes and/or support beyond transient alert capabilities is required.

3.30. Aero Repair (AR) Function. This function will maintain contact with the MOC and production superintendents to determine daily production goals and aircraft priorities. The AR function will:

3.30.1. Accomplish maintenance on aircraft systems and components and general maintenance tasks not within the capability of other maintenance functions. The function has the primary responsibility for the recovery and reclamation of assigned equipment and damaged or crashed aircraft, with secondary responsibility to all other aircraft. **NOTE:** The 56th Fighter Wing is authorized to locate its crash recovery responsibilities within the transient alert function. The 97th Air Mobility Wing (C-17 air-

craft) is exempt from the crash recovery requirements of this instruction; crash recovery for C-17 aircraft is accomplished under the regional support concept.

3.30.2. Establish specialized maintenance rig teams to accomplish flight control, canopy, landing gear, door systems, and other systems rigging as directed by the LG commander. These teams will consist of highly qualified personnel trained on each particular system. Each team may participate in flight crew debriefing, troubleshooting, repairing, or replacing components as necessary. When dispatched as a team to troubleshoot CND, repeat, recurring, and FCF discrepancies, initiate an AFTO Form 781A and automated MMS entries for all items inspected, tested, removed, or replaced. Review corrective actions prior to final release of the aircraft. AETC Form 403, **Landing Gear/Flight Control Malfunction History**, may be used.

3.30.3. Coordinate with the inspection function, MOC, and production superintendents to meet both scheduled and unscheduled work beyond the capability of the sortie generation flight and inspection functions.

3.30.4. To the maximum extent possible, train and qualify personnel on all types of aircraft assigned.

3.30.5. Provide sufficient personnel trained and certified for special and critical maintenance tasks.

3.30.6. Manage maintenance actions such as TCTO, major repair, or modifications, as applicable.

3.30.7. Establish a crash recovery and reclamation capability that will:

3.30.7.1. Coordinate with the fire department, safety, base medical personnel, disaster preparedness, operations, air traffic control, programs function, and QA to develop base procedures and plans for crash recovery of assigned and transient aircraft.

3.30.7.2. Provide adequate training for personnel assigned crash recovery duty.

3.30.7.3. Conduct a crash recovery exercise for each assigned MDS, consisting of lifting device positioning, sling hookup, and mock hoisting or lifting of the aircraft, including all -2 and -3 TO preparatory actions. Accomplish hoisting or lifting according to the applicable aircraft TO. Do not accomplish hoisting or lifting exercises when surface winds exceed 15 knots. Ensure representatives from ground safety are present as observers during these exercises. Use tethering lines during all hoisting operations. When using a hoist and sling, lift the aircraft the minimum distance required to ensure proper sling positioning (fore and aft). Do not lift the wheels off the ground. Record all crash recovery training as prescribed by AETCI 21-103.

3.30.7.4. Carry out custodial and storage responsibilities for special purpose equipment specifically assigned to the crash recovery mission. Ensure crash recovery equipment is adequately inspected and maintained.

3.30.7.5. Ensure requirements for special purpose and crash recovery vehicles are identified and training and certification on the vehicles is accomplished, as required.

3.30.7.6. Supervise recovery actions as directed by applicable functional supervisors.

3.30.7.7. Ensure reclamation and disposition responsibilities are accomplished as directed in applicable TOs.

3.31. Wheel and Tire Function. This function will accomplish maintenance on aircraft wheels and tires. In addition, the function will ensure:

- 3.31.1. Wheel and tire components are built up, repaired, tested, and stored (as required) to support the mission.
- 3.31.2. Wheel components are promptly processed to the NDI laboratory when required. **NOTE:** Due to the volume of wheel assembly inspection requirements, it is not necessary to load and track inspection frequencies in the automated MMS as long as inspection dates are recorded on the wheel assembly.
- 3.31.3. Wheel bearings are properly cleaned, inspected, lubed, and stored.
- 3.31.4. DIFM procedures are used when a supply point has been established for buildup assets. Issue and turn-in documents must be processed to base supply as required.
- 3.31.5. Wheel and tire buildup procedures prescribed in specific equipment TOs are followed.

Section 3E—LG Maintenance Squadron's Fabrication Flight

3.32. Overview. The fabrication flight will consist of the nondestructive inspection (NDI), structural maintenance, metals technology, corrosion control, plastic media blast (where available), and survival equipment functions. These functions may be combined or grouped as determined by the maintenance squadron commander. The aircraft and equipment wash function may be located within the LG fabrication flight or within the OG at the wing commander's discretion.

3.33. NDI Function. The NDI laboratory function will provide the capability to determine structural integrity of aircraft, specified components, and SE, including AGE. Contractor personnel must be qualified and certified according to National Aerospace Standard (NAS) 410, *NAS Certification and Qualification of Nondestructive Test Personnel*. The NDI function will:

- 3.33.1. Provide the capability to perform optical, penetrant, magnetic particle, ultrasonic, eddy current, radiographic inspections, and oil analysis, if available, to determine component integrity.
- 3.33.2. Establish procedures for the control and disposition of silver-bearing material. Coordinate with the base medical facility and the base precious metals managers to prevent duplication of effort.
- 3.33.3. Ensure NDI of aircraft, AGE, and other equipment is accomplished. Limit inspection findings to a description of the size, location, and type of defect discovered. (**NOTE:** Serviceability determinations are not made by NDI personnel except for inspect-only TCTOs, when NDI action constitutes the completed TCTO action.) On-equipment defects discovered by NDI personnel are assigned a Red-X symbol after the prime section determines the defect is a safety-of-flight item. NDI technicians will help the applicable prime work center determine the magnitude of the defect.
- 3.33.4. Ensure questionable indications of defects are confirmed, using another NDI method. For indications that cannot be confirmed beyond doubt by using an alternate NDI procedure, contact HQ AETC/LGMS.
- 3.33.5. Ensure a system to monitor personal exposure to radiation is established and maintained. This system is accomplished with the assistance of the director of base medical services (AFI 48-125, *The US Air Force Personnel Dosimetry Program*, and TO 33B-1-1, *Non-Destructive Inspection Methods*).
- 3.33.6. Ensure radiographic film files contain, as a minimum:

3.33.6.1. The last complete set of radiographs for each assigned aircraft and engine by serial number or ID number. Annotate the name of the person who interpreted the film on AETC Form 453, **Nondestruction Inspection History** (or locally developed interpretation worksheet). **NOTE:** Ensure the person interpreting the film also initials the set of radiographs or a locally developed interpretation worksheet, as applicable.

3.33.6.2. Radiographic paper exposures, such as nondetrimental FOs and nondetrimental discrepant honeycomb moisture exposures, may be discarded or reclaimed immediately after the discrepancy is corrected.

3.33.7. Comply with AFI 21-105, *Aerospace Equipment Structural Maintenance*, regarding the NDI program.

3.33.8. When OAP capability exists:

3.33.8.1. Manage the OAP as outlined in TO 33-1-37.

3.33.8.2. Inform and provide recommendations to the propulsion function, tenants, and supported units when findings show an unusual trend. (The propulsion function or owning section will determine corrective action.) The NDI function will immediately inform the MOC, who, in turn, will notify the owning section and the production superintendent of requests for grounding red cap samples. Following analysis of the requested red cap sample, NDI will immediately notify the MOC who will, in turn, notify the above functions and the propulsion OAP monitor of the findings. The NDI will then provide recommendations based on the analysis.

3.33.8.3. Inform the owning section upon receipt of any invalid oil samples. Identify the specific discrepancy to the submitting activity and request an immediate response. Establish local procedures to ensure all other OAP data errors are corrected in a timely manner.

3.33.8.4. Ensure completion of AETC Form 55, **Oil Analysis Program (OAP) Data Listing**, as follows:

3.33.8.4.1. Validate oil analysis recommendations and document these validations by initiating AETC Forms 55. Use section I to inform the appropriate sortie generation flight of aircraft that have overflowed oil sample intervals. In section A, record the data on the last sample received at the prescribed interval. In section B, record the data on the sample received that indicates an overfly condition. Use section II to inform the sortie generation flight and organizations supported by the NDI laboratory of engines on, or removed from, special sampling intervals. (See **Chapter 7** if the sampling interval exceeds 30 days or 50 hours.) Use section III to inform the sortie generation flight of errors on the DD Form 2026 not yet corrected. Use section IV to clarify information posted in other sections of the form.

3.33.8.4.2. Send a copy of the AF Form 55 to the appropriate work center function and file another copy in NDI laboratory.

3.33.8.4.3. Participate in a monthly review of Oklahoma City Air Logistic Center (OC-ALC) data products and base OAP records with personnel in the deficiency analysis and propulsion functions to assess the effectiveness of the local OAP.

3.33.9. When the AETC automated oil analysis system is provided:

3.33.9.1. *(For labs without computer backup systems only)* Review and initial a hard copy of the supervisor review of the daily burns listing every day that oil samples are processed. Keep this listing on file for 90 days and then discard it. Use it as a manual backup in case of system failure.

3.33.9.2. Ensure information on jet engines transferred to other AETC bases having the automated oil analysis system is transferred to the floppy disc. Copy the oil analysis history with the engine records. (This includes engines going to dedicated supporting maintenance facilities.) Ensure a hard copy of DD Form 2027, **Oil Analysis Record**, data is produced prior to the transfer (purge) of the data to floppy disc. Maintain the hard copy until the gaining laboratory acknowledges receipt. (The gaining laboratory supervisor will notify the losing laboratory supervisor on receipt of the engine oil analysis history.)

3.33.9.3. Initiate the purge (delete) of the burn records function weekly.

3.33.9.4. Establish and transmit an automated product to OC-ALC at least weekly to prevent extensive computer use. Ensure the automated information is not duplicated and processing dates for oil samples are included in the transmission.

3.33.9.5. Notify HQ AETC/LGMENTS in case of OAP work stoppage or equipment failure by the next duty day after discovery of the condition. Advise HQ AETC/LGMENTS whether the backup support plan must be implemented. If PMEL cannot repair the spectrometer within 72 hours, notify OC-ALC/TIESM, Tinker AFB OK, and request support (TO 33-1-37). Inform HQ AETC/LGMENTS when support is requested.

3.33.10. Ensure NDI large exposure rooms are not used to perform unscheduled maintenance actions not in direct support of NDI inspections. The LG commander may waive this requirement on a case-by-case basis if the radiation safety requirements specified in TO 33B-1-1 are met.

3.33.11. *(Randolph AFB only)* Assume responsibility for research and development as directed by HQ AETC/LGM.

3.34. Structural Maintenance Function. This function will perform major modification, manufacture, repair, and inspection of sheet metal, fiberglass and plastic components, and related hardware for aircraft, trainers, and assigned equipment. In addition, the structural maintenance function will:

3.34.1. Supervise the design and construction of forming jigs and dies.

3.34.2. Ensure the repair of honeycomb, metal-bonded components (including 463L pallets), composite materials, and skin-stressed dome antennas.

3.34.3. Ensure metal tubing, conduits, and cables are fabricated and tested according to applicable drawings, specifications, and TOs.

3.34.4. Notify HQ AETC/LGMENTS of new metal-working equipment that may increase productivity.

3.34.5. Ensure only metal-working technicians who have been certified in the use of the jo-bolt fastener removal kit actually remove jo-bolt fasteners from the T-38 lower wing skin. **NOTE:** This kit is the only authorized means of removing jo-bolt fasteners from the lower wing skin.

3.34.6. Provide for the storage of work center tools and materials. Provide protective bins for jigs, dies, and forming tools.

3.34.7. By memorandum to the appropriate ALC, report structural cracks that exceed the limit of the applicable equipment TOs and cannot be replaced. Send an information copy to HQ AETC/LGMS. Send a copy of the memorandum and any other pertinent information to the documentation function for updating AFTO Form 95, **Significant Historical Data** (manual or automated). Describe the defect and action taken in sufficient detail to permit documentation personnel extract significant historical data.

3.35. Metals Technology Function. This function will inspect, repair, weld, fabricate, heat-treat, clean, and test metal components for assigned equipment. It will manufacture, repair, and measure aircraft and equipment parts, assemblies, and tools. In addition, the metals technology function will:

3.35.1. Ensure welders are proficient and qualified in the materials they weld (TO 00-25-252, *Intermediate Maintenance and Depot Level Maintenance Instructions, Aeronautical Equipment Welding [NAVAIR 01-1A-34 and T.C. 9-238]*, and its AETC Sup 1).

3.35.2. Ensure compliance with metals cleaning safety procedures specified in AFOSH Standard 91-66/AETC Sup 1.

3.35.3. Ensure the proper materials have been selected before any manufacture is accomplished.

3.35.4. Ensure machine tool setup procedures, cutting operations, hand operations, and general machine shop operations (such as bench assembly, fitting, and adjusting machine parts) are correct.

3.35.5. Provide for storage of special in-shop tools and materials. Provide protective bins or inlays for reamers, cutters, and drill bits to prevent damage and corrosion.

3.36. Corrosion Control Function. This function will detect and treat aircraft and equipment corrosion and apply protective coatings and markings as necessary. In addition, the corrosion control function will:

3.36.1. Manage corrosion control facilities.

3.36.2. Chemically or mechanically treat aircraft, engines, AGE, and components for corrosion.

3.36.3. Ensure corrosion discrepancies are documented and input into the automated MMS.

3.36.4. Ensure protective coatings are applied to aircraft, AGE, equipment, and components according to applicable TOs and AETCI 21-106, *Corrosion Control*. Ensure aircraft historical records are annotated as appropriate. At least semiannually prepare a priority listing of aircraft that require corrosion control. Prepare the list in three parts, identifying aircraft that require complete paint, major touchup, and minor touchup. Provide a copy of this list to the operations squadron P&S function.

3.37. Aircraft and Equipment Wash Function. The aircraft and equipment wash function will supervise cleaning and washing actions as directed by applicable TOs. At the wing commander's discretion, this function may belong to either the OG or LG. The individual assigned as the wash rack supervisor must hold a structural maintenance AFSC 2A753 (or be trained by a qualified structural maintenance craftsman AFSC 2A773, or civilian equivalent, and have this training documented in his or her training records). (**NOTE:** It is the responsibility of the organization owning the aerospace equipment to supply personnel and perform the actual washes. Contract maintenance organizations will organize and operate aircraft and equipment wash facilities according to the current contract.) Additionally, the wash function will:

3.37.1. Establish and maintain supplies and equipment for aircraft and equipment washing, inspection, and treatment.

3.37.2. Maintain placards, signs, or other prominently displayed devices with the following minimum information: the soap and water ratio to be used, POC's telephone number, instructions for obtaining assistance, and checklist of available supplies.

3.37.3. Use only approved materials as identified in the appropriate TO by military specification or NSN for each corrosion control requirement. Ensure AF Form 3952, **Chemical Hazardous Material Request/Authorization**, is filed with the hazardous material pharmacy according to AFI 32-7086. When MIL SPEC materials are purchased commercially, ensure the vendor is identified on the qualified products list (QPL) for that military specification.

3.38. Plastic Media Blast (PMB) Facility. This function removes protective coatings from aircraft and AGE via the use of PMB equipment. In addition, the PMB function will:

3.38.1. Inspect areas and surfaces to be blasted and determine the technique to be used. Refer to individual systems TOs for limits on metal removal for particular parts.

3.38.2. Ensure only qualified personnel use PMB equipment and all training requirements are met.

3.38.3. Ensure aluminum components are not blasted in the same facility as ferrous materials.

3.38.4. Ensure aircraft stripped using PMB equipment will be identified in the aircraft historical records (AFTO Form 95) with the type of media used and date.

3.38.5. Ensure media is tested for high density particle contamination (TO 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*). Dispose of waste media and paint chips classified as hazardous waste in accordance with the wing hazardous waste program.

3.38.6. Ensure aircraft are not blasted more than once in an 8-year period (plus or minus 6 months) without written authorization from HQ AETC/LGMS.

3.39. Survival Equipment Function. The survival equipment function will provide the capability for the in-shop inspection, repair, manufacture, and repack of fabric, canvas, leather, rubber, and rubberized products. This function will also perform inspection, repair, and packing of personnel and deceleration parachutes, liferafts, life vests, antiexposure suits, and slides. It will perform PEs and maintenance of canopies and harnesses used for parasail training (TO 14D-1-2-411). In addition, the survival equipment function will:

3.39.1. Evaluate the extent of damage to fabric, leather, and rubber articles and decide whether to repair or condemn the item.

3.39.2. Inspect, clean, and test safety belts and harnesses. Ensure the seatbelt tester (NSN 4920-612-9755) is used to inspect towropes used in parasail training. Ensure locks, yokes, and frayed areas are tested every 250 feet. Emphasize the middle section of the towrope during testing.

3.39.3. Repair or fabricate sound-proofing materials for aircraft.

3.39.4. Provide maintenance, repair, and sewing of flight clothing and organizational equipment, to include installing leg straps on flight publication holders, replacing the zipper, and sewing wings, name, grade, and patches on flight clothing.

3.39.5. Ensure parachutes are inspected after each repack. The final inspection of the M11,000 parachute releases will be accomplished as follows:

3.39.5.1. Ensure arming knob cable sear pin and body assembly is properly installed.

3.39.5.2. Install an AFTO Form 255, **Notice Certification Void When Seal is Broken**, around the release assembly to cover portions of both aft and main body.

3.39.5.3. Document the inspection by placing initials in the upper right corner of the AFTO Form 255 and the Julian date of the completed inspection in the upper left corner. **NOTE:** For AETC, SA-ALC/LDIL has permanently waived the 120-day repack frequency, specified in TO 14D3-11-1, *Operations, Inspection, Maintenance, and Packing Instructions for Emergency Personnel Recovery PEXHR (Chest, Back, Seat Style, and Torso Harness) W/IPB – (ATOS)*, for BA22, BA25, and BA29 parachutes. Repack frequency for these parachutes is 180 days.

Section 3F—LG Maintenance Squadron's Accessories Flight

3.40. Overview. The accessories flight will consist of the pneudraulics, electro-environmental, egress, and fuel systems functions.

3.41. Pneudraulics Function. This function will accomplish maintenance on pneudraulic components, except environmental components, to include aircraft and SE hydraulic and high pressure pneumatic items. It will provide assistance on request to the AGE function and accomplish local manufacture and testing of flexible hose assemblies and tests tubing assemblies. It is also responsible for hydraulic fluid sampling on assigned test stands and servicing equipment. The pneudraulics function will also perform maintenance and inspections on KC-135 refueling drogues and booms (*Altus AFB only*).

3.42. Electro-Environmental Function. This function will perform maintenance on the following aircraft systems and components: oxygen, environmental, pneumatic, electrical, installed fire extinguishing, vacuum, and bleed air. It will maintain the capability to service, repair, modify, and test components of these systems to include authorized local manufacture, repair, overhaul, testing, modification, and inspection of electrical components, batteries, and battery charging units. This function will also repair gaseous and liquid nitrogen and liquid oxygen servicing units except the basic trailer or chassis and user type maintenance.

3.43. Egress Function. This function will accomplish maintenance on aircraft egress systems, components, and trainers. The egress function will:

3.43.1. Provide the capability to maintain aircraft ejection seats, extraction and escape systems, egress components of jettisonable canopies, explosive components of escape hatches and doors, and egress trainers. Egress personnel are responsible for removal and replacement of the drogue chutes, as applicable.

3.43.2. Request explosive ordinance disposal assistance when egress explosive devices are damaged or suspected of being more hazardous than normal.

3.43.3. Provide adequate storage for egress explosive items removed during maintenance (AFI 91-201, AFOSH Standard 91-66, and 11A-series TOs).

3.43.4. Provide training as required by AFI 21-112.

- 3.43.5. Ensure CAD/PAD verification procedures are followed.
- 3.43.6. Ensure reparable components are processed according to procedures in [Chapter 18](#).
- 3.43.7. Accomplish IPIs according to MAJCOM directives, equipment TOs, and local MOIs and wing instructions.

3.44. Fuel Systems Function. This function will accomplish maintenance, repair, functional check, and inspection of aircraft fuel, water, and aerial refueling systems and components, including maintenance of associated systems. In addition, the fuel systems function will:

- 3.44.1. Establish procedures to prevent unauthorized entry into fuel cell repair sites.
- 3.44.2. Provide buildup and maintenance capability for aircraft jettisonable external fuel tanks if applicable.
- 3.44.3. Provide safety training for fuel system repair technicians.
- 3.44.4. Ensure safety inspections are made and facilities and equipment used for fuel cell repair meet TO and AFOSH standards.
- 3.44.5. Perform confined space entry procedures to accomplish in-tank maintenance.
- 3.44.6. Identify, verify, and determine shelf and service life of sealant materials.
- 3.44.7. Handle, label, and dispose of hazardous materials and waste according to environmental standards.
- 3.44.8. Maintains a federal hazard communication program in accordance with AFI 21-101.
- 3.44.9. Establish and use procedures to contain fuel spills.
- 3.44.10. Use and maintain personal protective equipment (PPE) as applicable.
- 3.44.11. Service hydrazine tanks and establish hydrazine response teams as applicable.

Section 3G—LG Maintenance Squadron's Propulsion Flight

3.45. Overview:

- 3.45.1. The propulsion flight will consist of the following sections; jet, turboprop, and turboshaft engine intermediate maintenance (JEIM); test cell, accessory repair or modular repair; small gas turbine engine ([GTE] or small gas); engine support; and QEC kit management. These sections may be combined or grouped at the discretion of the maintenance squadron commander. Programs such as engine regionalization and 2LM may affect the standard organizational structure and responsibilities.
- 3.45.2. The flight will perform engine inspection, off-equipment repair, test, adjustment, trim, conditioning, and component replacement. It will also perform engine teardown, buildup, test, and repair of component and is responsible for parts and components for all QEC kits.

3.46. Propulsion Flight Chief Responsibilities. (*NOTE:* When applicable, 2LM procedures and policies will be followed. Engine maintenance on T-1, T-6, and T-43 aircraft is limited to on-equipment maintenance; off-equipment maintenance is provided by CLS.) The propulsion flight chief will:

- 3.46.1. Serve as the focal point for the wing propulsion maintenance program focusing on continuity, quality, and standardization. He or she is a key member who provides managerial advice to senior leaders on propulsion issues.
- 3.46.2. Monitor all aspects of the wing propulsion maintenance program.
- 3.46.3. Provide technical guidance as required to achieve and maintain quality propulsion systems necessary to support the wing mission.
- 3.46.4. Review production data to ensure propulsion units and components processed through the flight are repaired and functionally checked. Ensure complete QEC configuration before reinstallation or assignment to the spare line. Work closely with the EM section to implement established schedules.
- 3.46.5. Coordinate with the EM section as required to ensure accurate engine status reporting (AFI 21-104).
- 3.46.6. Coordinate with the EM section for effective planning of scheduled engine removals.
- 3.46.7. Provide propulsion support to other organizations when directed.
- 3.46.8. Ensure OAP guidelines are followed.
- 3.46.9. Ensure built-up engines are properly maintained.
- 3.46.10. Coordinate with base supply to determine if there is a need to establish parts kits for recurring maintenance jobs. If so, ensure the kits are made up from bench stock in the minimum quantities necessary to support the workload. Repair cycle assets will not be put in parts kit. Each section may have a visible file listing of all items required for the selected task. If prepared, the list will be located near the bench stock and will include NSN, part number, noun, and quantity per article of all items required for the task. Each section will review kit lists quarterly and add or delete items as necessary.
- 3.46.11. Ensure the use of AFTO Form 244, **System/Equipment Status Record**, and AFTO Form 245, **System/Equipment Status Record Continuation Sheet**, or an equivalent automated system, on engine test stands, test cells, and/or noise suppression systems, and propulsion support equipment.
- 3.46.12. Coordinate with civil engineering to provide maintenance on noise suppression systems and test cells. (If the wing or squadron is a tenant, incorporate this maintenance into the host-unit support agreement.)
- 3.46.13. Monitor parts requisitioned for engines in reparable status and coordinate with supply when parts are no longer needed.
- 3.46.14. Assist the applicable operations squadron (when requested) in reviewing and analyzing engine in-flight shutdowns (excluding normal shutdowns and restarts for training and FCF requirements), premature engine removals, and test-cell rejects. Ensure pre-maintenance test-cell runs are performed to confirm reported discrepancies (troubleshooting) or to determine an engine's condition before maintenance or inspection actions. Pre-maintenance test-cell runs are not subject to rejection criteria.
- 3.46.15. Ensure cannibalization procedures are followed and properly documented when any serially controlled, time change, or TCTO item is transferred from one engine to another.
- 3.46.16. Establish procedures to validate serially controlled component data during teardown and buildup of engines and accessories. Ensure the automated MMS inputs are correct and pay particular attention to part and serial numbers.

- 3.46.17. Where economical, screen 2LM assets to ensure only unserviceable assets are shipped for repair.
- 3.46.18. Ensure engines returned from depot or an authorized repair facility are tested for serviceability if a test cell is available. In such cases, retain uninstalled engine testing capability to the extent necessary.
- 3.46.19. Direct special emphasis in the following areas:
- 3.46.19.1. Control and maintenance of engine airlift trailers, maintenance and storage stands, and mounting adapters, to include direct manufacturing and maintenance of parts carts to store engine components and hardware. (The LG commander may assign this to the AGE function.)
 - 3.46.19.2. Reclamation and disposal procedures of engines and components removed from crashed aircraft.
 - 3.46.19.3. Premaintenance test cell operation to identify any additional maintenance requirements when an engine problem, workload, and/or experience show a pre-run would help.
 - 3.46.19.4. Determination of whether to perform a complete PE or HPO instead of minor repairs on an engine removed for unscheduled maintenance. The EM section will recommend a course of action to the propulsion flight chief, who will make the final decision. Factors to be considered include the availability of additional parts required to complete the reconditioning, PE, or HPO of an engine; number of additional days required to repair the engine; present and forecasted availability of serviceable engines in required configurations; work hours required to complete major maintenance versus limited repair, and TCTO kit availability; time changes; and special inspections required.
 - 3.46.19.5. Corrosion control program for engines, tools, and equipment.
 - 3.46.19.6. Propulsion flight portion of the FOD prevention program (AFI 21-101).
 - 3.46.19.7. Inspection, repair, corrosion control, and documentation of demountable noise suppresser systems when installed on power check pads and test stands.
 - 3.46.19.8. Review and analyze of all unscheduled engine removals and test cell rejects (paragraph [3.46.20.](#)). Assist the BEM in developing realistic forecasts. Scheduled and unscheduled engine and/or module removals are critical in balancing workloads against flight capabilities.
- 3.46.20. Ensure training requirements are identified, in-house training responsibilities are met, and formal training is used to the maximum extent possible (AFI 11-218/AETC Sup 1). A training and certification program for personnel authorized to accomplish test-cell engine operation is required (AETCI 21-103).
- 3.46.21. Ensure the unit follows the guidelines in AFI 21-104 and TO 00-25-257, *Engine Trending and Diagnostics, Users Manual*.
- 3.46.22. Periodically rotate personnel, to the maximum extent possible, to maximize depth and provide personal growth.
- 3.46.23. Establish a comprehensive borescope certification program for each type, model, and series modification (TMSM) possessed.
- 3.46.24. Establish a comprehensive bladeblending certification program (per AETCI 21-103 requirements) for each TMSM possessed.

- 3.46.25. Develop local IPIs for each TMSM with QA personnel.
- 3.46.26. Serve as the primary advisor for determining the utilization of 2A6X1 personnel.
- 3.46.27. Develop and implement a viable process to track ready spare engines, small gas turbines, and modules. As a minimum, the process will identify the following information: serial number, configuration, (enter TMSM, MDS, and position number, if applicable), time remaining (to periodic, reconditioning, or overhaul), preservation (date accomplished, type, and due date), and remarks (add any pertinent information about the engine).
- 3.46.28. Enforce AFOSH standards according to the applicable AFI 91-series.
- 3.46.29. Enforce environmental policies according to AFI 32-series. Establish an effective hazardous waste management program in the AFI 32-series.
- 3.46.30. Coordinate with the EM section and operations squadron superintendent to program engine removals and incorporate them into the weekly and monthly maintenance plans.
- 3.46.31. Develop a 6-month engine removal plan with the EM section, using the EM forecast as a baseline to manage the engine maintenance workload. Develop this plan, using automated computer products and include, as a minimum, scheduled engine removals for TCIs, PE inspections, TCTOs, and historical data to project unscheduled removals.

3.47. Oil Analysis Program (OAP). Close coordination with the NDI laboratory is essential to ensure detection of abnormal wear metal trends. In the OAP, the propulsion flight chief will ensure:

- 3.47.1. The OAP history on engines entering the shop is reviewed.
- 3.47.2. An OAP sample is taken prior to (for J69 engines only) and after completion (for all engines) of test-cell operational checks. Forward samples, with completed DD Forms 2026, to the OAP laboratory according to TO 33-1-37-1, *Joint Oil Analysis Program Laboratory Manual, Volume I, NSN 0817-LP-305-8000*.
- 3.47.3. A propulsion representative will participate in a monthly review of SA-ALC OAP data products and local OAP records to assess the effectiveness of the local OAP program.

3.48. JEIM Section. This section will perform buildup, teardown, modification, and repair of engines, propellers, QEC kits, afterburners, and accessories. It will test components when authorized by applicable engine TOs. The dock concept is the AETC method of engine maintenance for non-2LM units. This requires each engine to be assigned to a team of technicians to perform engine. Engine ownership remains with the assigned dock from initial disassembly of the engine through to final assembly, including its final inspection and assignment to the spare line. When authorized, this section will provide centralized support to designated activities (AFI 21-104). The JEIM supervisor will:

- 3.48.1. Plan and monitor the progress of propulsion system maintenance to ensure maintenance schedules are met. Anticipate delays and material requirements to prevent schedule disruptions.
- 3.48.2. Before beginning maintenance, ensure the work center reviews the engine work package for each engine undergoing PE, HPO, or major maintenance.
- 3.48.3. Ensure a work package is established for each engine in PE inspection, reconditioning, and other maintenance. As a minimum, the work package must include the engine serial number, type, and MDS; time since overhaul; reason for removal; historical information; and TCTO and TCI require-

ments. One workorder is initiated in CAMS for the entire job. Separate JCNs are initiated for discrepancies found during the look phase of an inspection or subsequent to repair. Complete workorders in CAMS during inspection, reconditioning, or maintenance. Work packages will contain worksheets documenting historical information, critical maintenance management stages, and employee numbers of technicians or supervisors completing maintenance or inspections. Work packages or sheets will be supplemented to fit unit needs. Flights with small computer capabilities may use computer-generated products provided all required information is included. Work packages will also contain the following:

3.48.3.1. Engine information worksheet. As a minimum, this worksheet will be used to document engine serial number, type, position (if applicable), engine operating time, date started work, date turned serviceable, JCN, maintenance required, reason for removal, list of time change and TCTO requirements, and a summary of maintenance accomplished. The supervisor will review signature blocks (crew chief, support, and EM section), and the section chief will verify all repair requirements have been accomplished and documented in the work package. CAMS flight line profile packages will be scheduled against the appropriate equipment ID. and should include corrective maintenance actions that pertain to the full removal and installation of that equipment.

3.48.3.2. Daily summary record. As a minimum, the daily summary record will be used to record all maintenance performed during each shift. Units may use a general purpose or locally approved form for this purpose. TO work packages and subordinate work packages used to perform tasks will be annotated. Additionally, employee numbers and dates will be included.

3.48.3.3. Receiving inspection worksheet. This worksheet will contain a list of items to be done by JEIM prior to engine repair. Minimum requirements are TO references for required receiving inspection criteria (if applicable), FOD check of engine inlet and exhaust, inspection of engine for general condition and fluid leakage, engine history recorder (EHR) and Turbine Engine Management System (TEMS) data (if applicable), engine trending diagnostic (ET&D) data (if applicable), borescope inspection requirements (if applicable), OAP lab data for possible problems, and a list of unique or problem areas to be checked prior to engine disassembly or maintenance.

3.48.3.4. Serial number tracked or accessory component replacement record. This worksheet will contain a list of components replaced by nomenclature, old and new part number (if applicable), serial number, and total operating time of old and new components.

3.48.3.5. Propulsion flight in-process inspection (IPI) list.

3.48.3.6. Parts requisition record. This lists all parts (including time change) on order. It has columns for stock numbers, nomenclature, part number, document number, quantity, and status.

3.48.3.7. Test-cell preparation worksheet. This worksheet contains a list of items to be accomplished by JEIM prior to sending an engine to the test cell. As a minimum, document the following: an inlet and exhaust FOD inspection, any pre-run servicing required, capped open lines, cannon plugs, and engine intake and exhaust. Also document a thorough tool inventory and an inspection for loose hardware. The section supervisor will document a review of the work folder to ensure maintenance performed or required actions are documented.

3.48.3.8. Test-cell pre-run worksheet. This worksheet will be accomplished by test personnel prior to an engine run. It will include documentation of the reference for required technical data inspection criteria (if applicable); inspection of the inlet, exhaust, and external engine for FOD; a check of the engine for general condition; and FOD inspection of the test stand, thrust bed, and

test-cell equipment. It will also include a tool box inventory prior to engine run, engine servicing checks, and a review to ensure prior to run checks and installation procedures have been completed. Also required is an annotation that fire extinguishing equipment is available and serviceable and a statement that personnel have been briefed on engine run emergency procedures prior to the run.

3.48.3.9. Test-cell post-run worksheet. This worksheet will list the items accomplished and documented by test-cell personnel after an engine run. It will include documenting the reference for TO inspection criteria, intake and exhaust inspection (to include FOD inspection), OAP sampling (obtain results prior to removal from the test stand if possible), engine test-cell discrepancies, amount of fluid serviced, tool box inventory after engine removal, date and type of engine preservation, and a synopsis of maintenance actions performed by test-cell (on the daily summary worksheet as well as completion of test-cell run sheet). In addition, annotate that a 7-skill level inspection of components replaced or disconnected at test cell has been accomplished. AFTO Form 350 will be attached to lines, fittings, or plugs requiring leak check when the engine is installed in an aircraft, and an AFTO Form 350 will be secured to and identifies the engine throttle is in "off" position.

3.48.3.10. Borescope inspection worksheet. This worksheet will be used for all engines requiring a borescope inspection. It may be locally developed unless otherwise specified by technical data to document inspection results for each required inspection.

3.48.3.11. Final inspection worksheet. This worksheet will list maintenance actions accomplished after repair and/or testing has been completed. Documentation will include technical data references for inspection criteria (if applicable); FOD inspection of intake, exhaust, and external engine; and statement of compliance with, and results of, final borescope inspection (if required). Additionally, annotate that throttle is secured to the "off" position, all engine plumbing and connections as being capped or plugged, AFTO Forms 350 are attached to components requiring leak check after installation in an airframe, and a serviceable tag is on the engine. Ensure supply accounts and CAMS have been cleared.

3.48.4. As a minimum, ensure the two most recent JEIM work packages established are maintained until the engine is permanently transferred, at which time, the work packages will transfer with the engine. Gaining units will maintain the work package until the engine is shipped back to the depot for a full Engine Structural Integrity Program (ENSIP) or overhaul inspection. Engine regional repair centers (ERRC) will maintain work packages for engines under their control.

3.48.5. Report all engine status changes to the EM section.

3.48.6. As a local option, obtain the 100-percent XB3 parts replacement kit from supply up to 30 days prior to scheduled engines removals. When this option is used, store parts replacement kits in a cabinet with sufficient bins to accommodate replacement kit items. Each cabinet should contain all replacement XB3 items for each engine assigned to the dock.

3.48.7. Perform and document acceptance inspections on newly assigned engines and modules.

3.48.8. Prepare engines, components, and associated documentation for shipment and attach CAMS or CEMS products to life-limited tracked components according to 00-20 TOs and ensure Automated Ground Engine Test System (AGETS) or Engine Test and Trim Automated System (ETTAS) rejected components are shipped with printouts and deficiency reports attached.

- 3.48.9. Properly identify engines or components being shipped as materiel deficiency report exhibits (TO 00-35D-54).
- 3.48.10. Ensure spare engines and components are properly preserved.
- 3.48.11. Ensure spare engines are secure and any discrepancies are corrected.
- 3.48.12. Ensure repair cycle assets removed are promptly processed into the repair cycle (**Chapter 18**).

3.49. Test-Cell Section. This section will test engines to accomplish performance and operational checks and troubleshooting prior to and after maintenance. Personnel will perform minor maintenance, make required adjustments to engines, and record data necessary to determine engine condition. Maintenance of trim pad facilities and associated equipment may be a test cell function. In addition, the test cell function will:

- 3.49.1. Report an engine as a test cell reject to EM when required maintenance is beyond the capability of test cell or equipment tooling personnel. Do not classify and report an engine as a test cell reject if any of the following conditions apply:
 - 3.49.1.1. The engine failed during the premaintenance test cell run, (or during the initial test cell run when no premaintenance run was performed).
 - 3.49.1.2. Maintenance was accomplished on the engine, but the engine failed the test cell run because of a problem not previously identified during the premaintenance run or as the cause for removal.
 - 3.49.1.3. An engine was removed from the test cell for repairs that could have been done on the test cell, but was removed solely to expedite the workflow.
- 3.49.2. Also report an engine as a test cell reject to EM if the engine fails the test cell run (after maintenance was performed for the same reason or problem identified during the premaintenance run or original cause for the removal) and due to a discrepancy induced or found in the same area in which maintenance was performed.
- 3.49.3. Ensure test cell pre-run and post-run inspections are performed on engines for external defects, evidence of malfunctioning systems, FOD, etc., and visually inspect the test cell area.

3.50. Accessory or Module Repair Section. This section is authorized if unit workloads warrant it. Examples of components repaired by the accessory repair shop are fuel nozzles, fuel manifolds, oil pumps, accessory housings, afterburners, and propulsion unit components. The function will also repair accessory gear boxes, fans, and attached units, bearings, compressor rotors, shafts, cases, turbine rotors, etc.

3.51. Small Gas Turbine Engine (GTE) Section. This function will accomplish maintenance on gas turbine units used in aircraft auxiliary power units, aircraft secondary power, or powered AGE. The function may be established for units supporting only small GTEs or when the workload warrants dividing the jet engine shop workload.

3.52. Engine Support Section. This section will process all supply requests, maintain AF Form 2413 and/or operate remote devices, track MICAP dueouts, monitor bench stock, conduct bench stock adjusted

levels, and operate tool storage areas. When the workload does not warrant the assignment of a supply specialist, the flight chief may designate an individual to perform these duties. In addition to other guidance provided in this instruction, the section chief will ensure a flight dueout release point and holding bins are established and urgency of need designator (UND) "A" and UJC "BQ" requirements are verified.

3.53. Quick Engine Change (QEC) Kit Management. If applicable, QEC kit removals and installations will be coordinated with the base engine manager and loaded to CAMS as a part or serial number item reflecting where installed or spared.

Section 3H—LG Maintenance Squadron's Avionics Flight

3.54. Overview of Avionics Functions:

3.54.1. The avionics flight will consist of the automatic test station, guidance and control, communication-navigation, circuit card repair (CCR), sensor systems (when assigned), and electronic warfare systems (EWS) when assigned. These functions are primarily responsible for 3LM and 2LM off-equipment avionics maintenance.

3.54.2. If the required support equipment is authorized and on hand, avionics sections are authorized to perform the following 2LM actions: (**NOTE:** Minor items must be prestocked in either base supply or bench stocks at sufficient levels to prevent awaiting parts conditions. Repairs above and beyond those listed below require approval from the appropriate approval authority; for example, MAJCOM, depot, etc.)

3.54.2.1. CND bench check serviceable screening.

3.54.2.2. Wing-level TCTOs.

3.54.2.3. LRU operational flight plan (OFP) loads.

3.54.2.4. Cross-cannibalization of shop replaceable units (SRU).

3.54.2.5. Replacement of minor bits and pieces.

3.54.2.6. Approved Gold Program repairs.

3.54.3. Where economical, 2LM assets must be screened to ensure only unserviceable assets are shipped for repair or tested to ensure serviceability after depot or authorized intermediate maintenance. In such cases, uninstalled avionics LRU testing capability will be retained to the extent necessary.

3.55. Automatic Test Station Function. When assigned, this function will maintain, program, and perform CND screening on avionics components peculiar to assigned weapons systems and troubleshoot and accomplish authorized repairs and TCTOs of LRUs, test stations, and associated SE. In addition, this function will maintain, calibrate, and certify test stations and associated SE not maintained by PMEL.

3.56. Guidance and Control Function. When assigned, this function will maintain the aircraft guidance and control systems and their components. Responsibilities may include, but are not limited to, the maintenance of stability augmentation systems (SAS); flight, navigation, engine, and general instruments; encoders; flight data recorders; inertial navigation systems (INS); autopilot systems; malfunction, detec-

tion, analysis, and recording subsystem (MADARS); and assigned test equipment not specifically maintained by PMEL.

3.57. Communication-Navigation Function. When assigned, this function will maintain the aircraft communications and navigation system and their components. Responsibilities may include, but are not limited to, the maintenance of IFF equipment, mode S transponders, instrument landing systems (ILS), tactical airborne navigation (TACAN) systems, traffic collision avoidance systems (TCAS), global position systems (GPS), search and weather radar, UHF, and very high frequency (VHF), and high frequency (HF) communication and intercommunication systems. Other duties include maintenance of radio life support equipment, aircraft radios installed in a ground environment, and assigned test equipment not specifically maintained by PMEL.

3.58. Circuit Card Repair (CCR) Function. When assigned, this function will perform diagnostic tests and complex repairs on circuit card assemblies, including those coded as "throwaway." This function may be locally assigned under other repair elements. For other guidance on CCR, see AETCI 21-111, *Gold Way Program*.

3.59. Sensor Systems Function. When assigned, this function will maintain sensor systems and associated support equipment and perform TCTOs, field tests, and other field modifications as directed by higher headquarters or depot.

3.60. Electronic Warfare Systems (EWS) Function. When assigned, this function will maintain both on- and off-equipment EWS and components and assigned support equipment. Specific responsibilities will include maintaining ECM pod status, histories (AFTO Form 95) and scheduling records; loading proper contingency and training configuration setting in EWS equipment as directed by the OG; storing, transporting, and loading ECM pods; maintaining physical security of assigned classified publications, components, and software; and performing TCTOs, field tests, and other field modifications as directed by higher headquarters or depot.

Section 3I—LG Maintenance Squadron's TMDE Flight

3.61. PMEL Function:

3.61.1. The PMEL will provide logistics support through repair, calibration, and certification of designated SE. This equipment, commonly referred to as test, measurement, and diagnostic equipment (TMDE) or automatic test equipment (ATE), is used to calibrate, test, inspect, diagnose, or otherwise examine materials, supplies, and equipment to determine if they meet the specifications established in technical documents. The PMEL will perform in-laboratory and onsite calibration and repair using transportable field calibration units (TFCU), portable automatic test equipment calibrators (PATEC), and jet engine test cell calibrators (JETCC).

3.61.2. The type IV PMEL section will calibrate, certify, and maintain TMDE according to the supported weapon systems calibration and measurement summary (CMS). Sufficient storage and work space will be assigned adjacent to avionics test stations. PMEL, in addition to the laboratory measurement areas, will include QA and a materiel control section. This function will also be responsible for off-equipment maintenance of other aircraft instruments; the inspection, calibration, and repair of

torque wrenches; and tensiometers. A field assistance support team for calibration (FASTCAL) may also be assigned.

3.61.3. PMEL will assist supported activities with user-calibrated and -maintained SE and operational systems when requested. PMEL, has geographical area support responsibility to any activity where support is determined to be in DoD's best interest and regional support agreements are complied with (TO 00-20-14).

3.61.4. TMDE flights with type II and type IV PMEL sections will ensure:

3.61.4.1. Separate work center mnemonic codes are maintained for each PMEL within the flight.

3.61.4.2. Separate equipment accounts are maintained for the purpose of identifying equipment items for mobilization.

3.61.4.3. Type IV PMEL TOs are maintained as a subaccount under the TMDE flight technical order distribution office (TODO) account.

3.61.4.4. A sufficient number of QA inspectors and augmentees are trained to support all mobility commitments.

3.61.4.5. Mobility positions are manned by personnel qualified on TMDE identified for deployment. Every effort should be made to provide cross-utilization training for assigned personnel.

3.61.4.6. Along with this instruction, TO 00-20-14; TO 33-1-27; TO 33K-1-100, *TMDE Calibration Notes Maintenance Data Collection Codes, Calibration Measurement Summaries, Calibration Procedures, Calibration Interval and Work Unit Code Reference Manual*; AFI 21-113, *Air Force Metrology and Calibration (AFMETCAL) Program*; AFMANs (and AFJMANs) in the 32-10 series; wing instructions; and MOIs will be used to ensure the PMEL operation and facilities meet certification standards.

3.61.4.7. Effective production planning and control to minimize calibration and repair turnaround time of TMDE. Establish priorities to meet mission requirements.

3.61.4.8. The integrity of the PMEL total quality program (TQP) is maintained as defined in TO 00-20-14 and this instruction.

3.61.4.9. Access to the laboratory and equipment storage areas are limited to only those personnel required for mission accomplishment.

3.61.4.10. Effective materiel control is established and maintained. Establish hours during the normal duty day for turn-in and pickup of TMDE. This period should cover approximately one half of the duty day to allow adequate time for administrative actions. PMEL will accept valid priority (mission essential) equipment any time. Ensure appropriate supply priorities and followup actions are taken to minimize AWP time for TMDE.

3.61.4.11. A wing instruction is published to prescribe TMDE handling, processing, customer procedures, and TCTO procedures. **NOTE:** For contractor maintenance, the wing instruction must be coordinated by the chief QAE and approved by the contracting officer prior to publication.

3.61.4.12. Applicable TCTOs are properly identified, accomplished, and documented on equipment for which the PMEL has calibration and repair responsibility.

3.61.4.13. Support agreements involving PMEL are coordinated with applicable agencies to ensure compliance with TO 00-20-14.

3.61.4.14. Requirements for off-base shipment of TMDE to other PMELs, ALCs, or contract repair facilities are controlled and verified.

3.61.4.15. Lateral support is arranged from other PMELs, depot, or the Aerospace Guidance and Metrology Center (AGMC) for items that cannot be supported locally within the next 30 days or items that have been in hold status for over 30 days.

3.61.4.16. The electrical standards set (ESS), FASTCAL, JETC, PATEC, and TFCU are maintained as complete sets and are available for immediate deployment.

3.61.4.17. Close coordination with military public health, bioenvironmental engineering, and the civil engineering environmental engineering flight to ensure strict compliance with federal, DoD, and Air Force instructions and guidance governing radioactive material handling, permit, and licensing procedures.

3.62. PMEL Total Quality Program (TQP):

3.62.1. The PMEL TQP will provide an objective sampling of the maintenance performed and the qualifications of PMEL technicians. The PMEL TQP, established in Chapter 9 of TO 00-20-14, will be used and will satisfy the quality maintenance requirements in this instruction.

3.62.2. The PMEL supervisor will select qualified PMEL technicians as primary and alternate inspectors. The selections will be in writing with final approval by the squadron maintenance officer. The primary PMEL inspector will report to the PMEL supervisor and may be assigned labor code 310.

3.62.3. When selecting PMEL inspectors, completion of PMEL supplemental training courses and proficiency in the applicable measurement areas within the PMEL will be considered.

3.62.4. The PMEL inspector will review TO improvement reports and product quality deficiency reports for compliance with TOs 00-5-1 and 00-35D-54 and will monitor TCTO compliance on TMDE supported by the PMEL.

3.63. TQP Records, Reports, and Routing Procedures. Forms identifying discrepancies will be forwarded monthly with an AF Form 2419, **Routing and Review of Quality Control Reports**, or locally approved form, to the squadron maintenance officer, flight chief or superintendent, QA, contract QAE, or the LG commander for review, as applicable. The AF Form 2419 or locally approved form will include a summary of evaluation and inspection results. As a minimum, the summary will include results of quality process reviews, in-process reviews, working standard reviews, number of nonconformities, and root cause analysis (TO 00-20-14). The inspector will initiate and file these forms in the PMEL.

3.64. PMEL Forms. AFTO Form 163, **Request for Limited/Special Calibration**, will not be used in AETC. Other form requirements and procedures are specified in TO 00-20-14.

3.65. PMEL Materiel Control. The PMEL materiel control will coordinate support provided by the PMEL, control customer equipment within the PMEL, and manage all supply actions. In addition, materiel control will:

3.65.1. Inspect each item of incoming TMDE for exterior condition. **NOTE:** The owning section responsibilities are defined in TO 33-1-27 and TO 00-20-14. TMDE not meeting the requirements of these TOs will be brought to the attention of the owning section and may be refused and returned.

- 3.65.2. Coordinate onsite support when it is not practical to move TMDE to the PMEL; coordinate the start time and priority with the owning section and PMEL personnel.
- 3.65.3. Brief and train TMDE coordinators on their duties and responsibilities within the Air Force Metrology and Calibration (AFMETCAL) Program.
- 3.65.4. Notify the owning section when TMDE is not delivered for calibration within 3 workdays (for onbase organizations) and 10 days (for off-base organizations). Local procedures may be established for customers with unusual delivery problems or mission requirements.
- 3.65.5. Inform owning sections of TMDE status changes to AWP, NRTS, or on hold within 3 workdays. Initial notification may be by telephone, but must be followed by written notification to the owning section chief.
- 3.65.6. Distribute the TMDE due calibration schedule (by owning section) before the first of the month. The owning section will correct the schedule and return it within 5 workdays.
- 3.65.7. Provide supported sections a master inventory listing at least quarterly.
- 3.65.8. Update the master inventory, using the corrected schedule from the owning section.
- 3.65.9. Document off-base TMDE shipments to establish an audit trail (AFMAN 23-110, Volume 2, and TO 00-20-14) as follows:
- 3.65.9.1. Prepare necessary copies of DD Form 1149, **Requisition and Invoice/Shipping Document**. Stamp all copies with the letters "TMDE" in 1-inch high block letters, using red ink. The DD Form 1149 will also contain the words "DO NOT POST" in item 4 and "Supply Inspection Not Required, Ship By Traceable Means Only" in section B.
 - 3.65.9.2. Contact the destination organization to coordinate shipping date as required.
 - 3.65.9.3. Request shipment priority according to the uniform materiel movement and issue priority system (UMMIPS).
 - 3.65.9.4. Arrange for delivery of the TMDE, DD Form 1149, AFTO Form 350 (for unscheduled calibration or repair), and AF Form 537, **PME Shipping**, to the packing and crating unit.
 - 3.65.9.5. Retain two signed copies of DD Form 1149 for TMDE released to the packing and crating unit. These copies must contain sufficient information to identify the owner or user, part number, NSN, ID number, PMEL automated management subsystem (PAMS) label number, nomenclature, and the document number assigned by the transportation unit. Keep one copy of the DD Form 1149 until the shipment is returned to the owner or user; mark the other copy "advance copy" and mail it to the organization receiving the shipment.
 - 3.65.9.6. File the advance copy DD Form 1149 or other form of notification in a suspense file when notified of return shipment. Notify the traffic management office when the shipment has not been received within 30 days of the shipment date.
 - 3.65.9.7. Reconcile the advance copy with the DD Form 1149 received with the shipment and clears the suspense.
 - 3.65.9.8. Notify the originator of receipt of the shipment.
 - 3.65.9.9. Update the master inventory; schedule and route the TMDE through QA.

- 3.65.10. Manage all supply actions and provide assistance to PMEL personnel in resolving supply problems (**Chapter 17**).
- 3.65.11. Order requirements for TCIs and TCTO parts and kits for all equipment supported. Coordinate TCI and TCTO kit inventories with supply.
- 3.65.12. Review TMDE in AWP status a minimum of every 30 days. Ask the owning section to review the UJC, force activity designator (FAD), and priority. Discuss alternatives with the owning section and supply, such as increasing priority, using MICAP procedures, cannibalizations, NRTS action, local purchase of parts, depot repair and return, and contract repair.
- 3.65.13. Ensure maintenance personnel are fully aware of procedures for the automatic issue of interchangeable items. Take necessary action to delete items that are unsuitable substitutes and interchangeables from the interchangeable and substitute group (I&SG) list.
- 3.65.14. Maintain authorized bench stock and participate in joint bench stock reviews with assistance from supply (**Chapter 18**).
- 3.65.15. Monitor the DIFM program (**Chapter 18**).
- 3.65.16. Recommend cannibalization actions (**Chapter 16**).

3.66. PMEL Reports. Submit RCS: LOG-MA(SA)7808 according to TO 00-20-14. (Submit separate reports on each PMEL.)

3.67. PMEL Automated Management Subsystem (PAMS). PMEL functions will use PAMS. Only TMDE and SE for which PMEL is responsible for maintenance will be maintained in PAMS. User calibrations and SE inspections and maintenance (TO 00-20-5) not performed by the PMEL will not be maintained in PAMS. Torque wrenches will be maintained in PAMS if the calibration or repair is performed by PMEL. The PMEL supervisor will appoint primary and alternate PAMS managers who will:

- 3.67.1. Manage PAMS to ensure compliance with Air Force, command, and local instructions governing small computer systems.
- 3.67.2. Install and maintain PAMS security according to PAMS series publications. Assign passwords, maintain password log, maintain user files for each user of PAMS, and update PAMS personnel data files. (Only PAMS managers will have access to the master passwords or command lines.)
- 3.67.3. Provide PAMS training to PMEL personnel. Document training for each user.
- 3.67.4. Perform file maintenance (according to PAMS series publications) as follows:
 - 3.67.4.1. Perform daily, weekly, and monthly backups; verify backup data; and maintain tape backup libraries. Reconcile files before making weekly and monthly backups by deleting temporary files and other files no longer required. To protect monthly backup against fire, water, and heat damage, store them in a secure location other than the PMEL.
 - 3.67.4.2. By mail, perform MDC data transfers semiannually by PMEL report (RCS: HAF-LG[SA] 7808).
 - 3.67.4.3. Install PAMS software revisions and perform restoration of PAMS data files.
 - 3.67.4.4. Back up, initialize, and restore the system disk according to AFCSM 21-303, Volume 2, *Precision Measurement Equipment Laboratory (PMEL) Automated Management System (PAMS)*.

- 3.67.4.5. Recover the system from the backup disk as required.
- 3.67.4.6. Install spooler files and assign a spooler task to the specific terminals.
- 3.67.4.7. Write and run PAMS reports.
- 3.67.5. Initiate service request for PAMS hardware. Ensure user and owner maintenance is accomplished as required.
- 3.67.6. Route PAMS software discrepancy reports (AF Form 1815) to HQ AETC/LGMTA.
- 3.67.7. Ensure adequate supplies are on hand to support PAMS operation, such as computer paper, floppy disks, tape cartridges, printer ribbons, etc.
- 3.67.8. Maintain a library of PAMS series and software publications.
- 3.67.9. Report system problems to HQ AETC/LGMTA. Work with other PAMS managers to resolve problems within the command.

Section 3J—LG Maintenance Squadron's Aerospace Ground Equipment (AGE) Flight

3.68. AGE Function. This function will maintain all assigned AGE except CLS-furnished SE, munitions SE, and engine SE. (Engine SE may be maintained by the AGE function at the discretion of the maintenance squadron commander.) The term "AGE" pertains to those items of portable engine or motor driven and nonpowered SE used in servicing, handling, and maintaining aircraft, aircraft trainers, subsystems, and equipment. The AGE function will provide the capability for pickup, delivery, troubleshooting, repair, modification, inspection of AGE, and centralized aircraft support system (CASS), as applicable. A dedicated combat AGE team (CAT) and driver concept may be used at the option of the unit. In addition, the AGE function will:

- 3.68.1. Coordinate with the flight line production superintendent to establish types and minimum quantity of AGE needed to support the mission.
- 3.68.2. Coordinate with the training management function to establish and monitor the AGE operator training program.
- 3.68.3. Ensure equipment used on a seasonal basis is preserved and stored when not in use.
- 3.68.4. Manage AGE dispatch vehicles.
- 3.68.5. Comply with procedures for historical document maintenance when AGE documents are decentralized.
- 3.68.6. Approve or disapprove cannibalizations of AGE (**Chapter 16**).
- 3.68.7. Ensure an AGE numbering system is established (TO 35-1-3, *Corrosion Prevention, Painting and Marking of USAF Support Equipment [SE]*).
- 3.68.8. When authorized, establish and operate a dispatch subpool of AGE.
- 3.68.9. Comply with uniform repair and replacement criteria for selected SE established by TO 00-25-240, *Uniform Repair/Replacement Criteria for Selected USAF Support Equipment (SE)*, and implemented by TO 35-1-24, *General Instructions – Air Force Economic Repair/Replacement Criteria for Selected San Antonio ALC Managed Support Equipment (SE)*; TO 35-1-25, *Technical Manual - Economic Repair Criteria Support Equipment (SE) NSC 4310, 4320, 4520*; and TO 35-1-26, *Gen-*

eral Instructions - Air Force Economic Repair/Replacement Criteria for Selected SM/ALC Managed Support Equipment (SE) FSG6100.

3.68.10. In coordination with using activities, ensure AGE authorizations are recalculated and quantities adjusted when the numbers of assigned aircraft change.

3.68.11. In coordination with using activities, annually reevaluate the quantity of all equipment onhand and ensure equipment in excess of actual needs is forwarded to base supply for disposition.

3.68.12. Ensure an MOI, wing instruction, or support agreement is established that includes procedures for supporting deployed AGE at dispersed locations for other than contingencies.

3.68.13. Ensure AGE and assigned in-shop equipment are properly prepared for storage or shipment (TO 35-1-4, *Processing and Inspection of Support Equipment for Storage and Shipment*). This includes helping the servicing, pickup, and delivery work centers prepare equipment for mobility or contingency operations.

3.68.14. Ensure maintenance on AGE turbine engines beyond the function's capability is done by the propulsion function, as applicable.

3.68.15. Ensure servicing and PE inspections are done and documents are properly filled out (00-20-series TOs). Perform a pre- and post-inspection document review.

3.68.16. Coordinate AGE location and status changes with the appropriate flight line expediter or production superintendent.

3.68.17. Provide an annual equipment inventory listing to the HQ AETC/LGMTS manager no later than the last business day of July. Ensure inventory listings include all AGE maintained by the flight. Information should include the nomenclature, stock number authorized, stock number onhand, equipment account, allowance source code, and field number.

3.69. AGE Subpool Management. If directed by the LG commander, the AGE function will establish an AGE subpool. A subpool is a location on base, other than the central AGE pool, where AGE is kept for dispatch. Subpools may be established based on mission needs, facilities, or base layout. Servicing inspections, minor maintenance, and servicing should be done at the subpool location when possible.

3.70. AGE Operator Training:

3.70.1. The AGE function will establish an AGE operator training program in coordination with the training management function. The program will include safety and operating procedures (AFOSH Standards 91-66 and 91-100) and prior-to-use inspections (TO 00-20-5 and applicable equipment TOs). Qualified AGE personnel, instructors, or supervisors certified by the AGE function will provide the training.

3.70.2. The AGE function will coordinate with the training management function to schedule the type of training required. On completion of training, an AF Form 2426 will be completed and sent to the training management function. The AGE function will determine if any other training is required when modifications to equipment or changes to TOs are made. (Specific training requirements are in AETCI 21-103.)

3.71. AGE Production Scheduling and Documentation. If workloads warrant, full-time schedulers (AFSC 2R1X1 or civilian equivalents) will be assigned to the AGE function and report to the AGE flight chief. The production scheduler will:

- 3.71.1. Develop long range, monthly, and weekly plans. These plans will identify inspections, time changes, TCTOs, and other known maintenance requirements, using TDI and the automated MMS TCTO reports.
- 3.71.2. Coordinate with outside work centers on scheduled maintenance requirements.
- 3.71.3. Provide a reproducible copy of the AGE function monthly plan to the OSS PS&D by the third Tuesday of the month preceeding the effective month.
- 3.71.4. Provide a legible copy of the AGE function weekly schedule annex to the OSS PS&D by 1200 Thursday of the week preceeding the effective week for inclusion into the weekly plan.
- 3.71.5. Schedule all required maintenance actions in the automated MMS once the weekly schedule is approved for inclusion into the upcoming weekly utilization and maintenance plan.
- 3.71.6. Requisition parts to satisfy time change requirements for AGE components identified in the applicable TOs ([Chapter 7](#)).
- 3.71.7. Monitor inspections and time change subsystems of the automated MMS. Quarterly, review TDI for all AGE JSTs for overdue, missing, and excess items and time changes. The scheduler will annotate discrepancies found on each TCI, and the AGE function supervisor will forward discrepancies to the appropriate repair function for corrective action. When corrected, the repair function will return TDIs to AGE scheduling personnel, who will file the TDIs until they are replaced by the next quarterly review.
- 3.71.8. Maintain the JML for all AGE function equipment in the automated MMS. Update the JML as inspection and time change requirements change in governing TOs. Semiannually, reconcile the JML with appropriate governing TOs to ensure inspections and time change frequencies are accurate. Document the reconciliation on the working copy of the JML or AF Form 2411; include the name of the individual accomplishing the reconciliation and the date completed. File this documentation until replaced by the next reconciliation.
- 3.71.9. Manage TCTOs, command modifications and one-time inspections, and local one-time inspections (AFI 21-101).

3.72. Centralized Aircraft Support System (CASS) Function. Where CASS is installed, this function will perform on- and off-equipment maintenance and PEs on pad and flight line-installed CASS equipment. The CASS function will:

- 3.72.1. Ensure timely accomplishment of PEs on CASS equipment.
- 3.72.2. Ensure the status of CASS equipment is maintained in the automated MMS. A status board may also be used.
- 3.72.3. Inform the MOC and production superintendent of status changes to CASS equipment that affect the ability of CASS to support the mission.
- 3.72.4. Ensure CASS is placed in the standby mode any time flying is delayed or canceled for a considerable length of time.

3.72.5. Request special assistance for maintenance beyond the capability of assigned personnel or equipment.

3.72.6. Establish a CASS equipment corrosion control and paint program and update requirements annually.

Section 3K—LG Maintenance Squadron's Armament Flight

3.73. Overview:

3.73.1. The armament function is responsible for off-equipment maintenance of assigned aircraft armament systems, guns, pylons, racks, launchers, and adapters.

3.73.2. The armament function at Luke AFB is organized as an armament flight with maintenance, AME, and support sections. The armament function at Tyndall AFB is contracted and is responsible for all applicable armament functions identified in this section. At bases other than Luke and Tyndall, the weapons section is responsible for all applicable armament functions identified in this section. **NOTE:** Only military units are bound to the organizational requirements of this section. Contract and civil service units will organize according to their respective contract.

3.73.3. At Luke AFB, a 2R1X1 scheduler will be assigned. A 2S0X1 supply specialist and a 3A0X1 information management specialist may also be assigned. Unless the overall unit manning is inadequate to meet load crew standards, armament personnel will not be certified as load crewmembers.

3.74. Armament Flight Chief and/or Commander (at Luke AFB). (**NOTE:** The following responsibilities are in addition to the general responsibilities outlined for flight chiefs, flight commanders, and section chiefs in [Chapter 2](#).) The armament flight chief and/or commander at Luke AFB will:

3.74.1. Work with the wing weapons manager to ensure an equitable grade and skill level balance of AFSC 2W1X1 personnel between the weapons sections and the armament flight.

3.74.2. If combat armament support teams (CAST) are formed, designate team chiefs. Team chiefs will be at least 7-skill level NCOs and be responsible for all maintenance actions performed by their team.

3.74.3. Designate maintenance section chiefs for overall management of maintenance responsibilities.

3.74.4. Establish and manage a wing incentive program for armament personnel.

3.74.5. Determine the quantity of 2W1 technicians and supervisors authorized to use CAMS screens 45 and 46 for making corrections to AME and NIE serially controlled subcomponents. Approve individuals recommended by CAST or section chiefs. The quantity of personnel authorized to use these screens must be limited to the minimal number required to ensure timely documentation.

3.74.6. Ensure proper JDD procedures are used as applicable. Proper JDD procedures are interpreted as creating and clearing jobs in the automated MMS.

3.75. Armament Flight (All Bases):

3.75.1. Ensure gun room security and safety procedures are established, if applicable, including explosive licenses if required (AFI 91-201 and AFI 31-101).

3.75.2. Ensure AME, equipment, supply point, and special purpose recoverables authorized to maintenance (SPRAM) accountability and control requirements are followed (AFI 21-103 and AFMAN 23-110, Volume 2, part 13).

3.75.3. Identify to base supply (by NSN) all armament systems items requiring functional and/or acceptance inspection (AFMAN 23-110, Volume 2).

3.75.4. If applicable, develop an MOI for in-shop handling and maintenance of jammed or broken guns, gun systems, and ammunition handling systems (AFI 91-201).

3.75.5. Forward 3-skill level technical school graduate assessment surveys (GAS) to the wing weapons manager for review. (At units without a wing weapons manager, the armament flight chief will perform the review.) The purpose of this review is to ensure the weapons manager (or armament flight chief) is aware of supervisory concerns about technical school graduates.

3.76. Armament Maintenance Section Chief (at Luke and Tyndall AFBs). At Luke AFB, this section may be divided into CASTs that are aligned with and provide exclusive support to their respective operations squadrons to the maximum extent possible. (**NOTE:** For administrative purpose, CASTs are considered elements.) The armament section chief at Luke and Tyndall AFBs will:

3.76.1. Monitor AME in-commission rates monthly. Command performance level for AME in-commission is 90 percent; take corrective action when rates fall below this level. Calculate rates by the type of equipment in their functional configuration; for example, a pylon with a bomb rack installed and a missile launcher with a remote interface unit installed are considered one item for measuring purposes. Equipment is considered in-commission if there are no discrepancies or parts required (to include TCTOs) that would hinder performance of the intended function. **NOTE:** Equipment is not considered out of commission just because it is undergoing scheduled, preventative, or minor maintenance.

3.76.2. Ensure the armament PS&D: (**NOTE:** Plans and schedules are developed separately for each operations squadron or other customers supported. Plans and schedules may be developed on a single product, providing they distinguish between customers.)

3.76.2.1. Develops long range, monthly, and weekly plans and identifies all inspections, TCTOs, and other maintenance requirements (or equipment usage) in a format that depicts required actions by day, equipment type, and serial number.

3.76.2.2. Coordinates with armament maintenance section chiefs, CAST chiefs, and appropriate outside functions on scheduled maintenance requirements.

3.76.2.3. Produces and delivers monthly armament plans to the appropriate PS&D by the third week of the preceding month for inclusion in the monthly maintenance plan.

3.76.2.4. Produces and delivers a copy of the armament weekly schedule annex to the central PS&D no later than noon on Wednesday of the week proceeding the effective week.

3.76.2.5. On approval of the weekly schedule, schedules all maintenance actions in the automated MMS.

3.76.2.6. Maintains a current TDI product for all armament-related JSTs and desired automated MMS TCTO reports.

3.76.2.7. Monitors inspection and time change subsystems of the automated MMS. Monthly reviews TDIs for all armament JSTs. As a minimum, reviews for overdue, missing, and excess inspections. Annotates discrepancies on the TDIs and provides a copy to the work center supervisor for correction and return. Maintains a file copy of the most current corrected copy of each TDI.

3.76.2.8. Manages the JML for all armament equipment in the automated MMS. Updates the JML as inspection and time change requirements change. Semiannually, reconciles the JML with appropriate governing TOs to ensure inspections and time change frequencies are accurate. Documents the reconciliation on a printed copy of the JML or AF Form 2411, to include the date and name of the inspector. Retains this copy on file until it is replaced by the next reconciliation.

3.76.2.9. Loads applicable JSTs to armament equipment items during aircraft and/or equipment acceptance and receipts from supply or other sources.

3.76.2.10. Requisitions parts to satisfy time change requirements for armament equipment not identified in applicable -6 TOs ([Chapter 7](#)).

3.76.2.11. Manages TCTOs, command or local modifications, and one-time inspections (AFI 21-101).

3.76.2.12. Provides the wing weapons manager with armament tester and equipment status quarterly per the requirements identified in paragraph [23.3](#) of this instruction.

3.77. Armament Maintenance Responsibilities (at Other Than Luke and Tyndall AFBs). Armament maintenance functions at other than Luke and Tyndall AFBs will:

3.77.1. Ensure PS&D is aware of all applicable -6 and other armament inspections. (PS&D is responsible for all applicable scheduling functions.)

3.77.2. Identify all time change requirements for armament equipment not listed in -6 TOs to PS&D. (PS&D will requisition parts and schedule all time changes.)

3.78. Armament Maintenance Responsibilities (All Bases). All armament maintenance functions will:

3.78.1. Perform all off-equipment inspections, TCTOs, time changes, maintenance, and repair actions for armament NIE, AME (to include AME loaded with munitions for contingencies), war readiness material (WRM), and base supply assets as applicable.

3.78.2. As applicable, manage assets through the repair cycle according to [Chapter 18](#).

3.78.3. Maintain and inspect ammunition loading assemblies and/or systems. (The munitions activity is responsible for the chassis, to include the rear deck.)

3.78.4. Maintain equipment historical records; automated or AFTO Form 95 for armament AME, NIE, aircraft guns; and, if applicable, ammunition loading systems (TO 00-20-5). Develop a listing of significant maintenance actions requiring entry by the work center that are not specifically mentioned in TO 00-20-5. Units with an automated MMS will maintain a current printed copy of automated histories on file for ready reference and backup.

3.78.5. Perform the off-equipment portions of aircraft armament equipment transfer and acceptance inspections. These inspections will include a parts integrity inspection (to ensure equipment serial numbers match records received) and a review and update of historical records for all AME and NIE. Inspections will also include a complete electrical and mechanical checkout of NIE and AME not

installed on the aircraft (including associated cables). Equipment received from supply or similar sources need only be inspected (disassembled to the point necessary) to ensure it meets the standards specified in the applicable TO. **NOTE:** Installed equipment (NIE or AME) need not be removed for acceptance or transfer inspections unless a malfunction, defect, overdue inspection, or discrepancy requiring removal is detected.

3.78.6. Ensure JDD procedures are used to install and remove all NIE in the automated MMS.

3.78.7. Ensure documentation in the automated MMS for AME routinely installed for periods longer than 30 days (such as the F-16 wingtip launchers and center line pylons) is accomplished, using the appropriate JDD. All other AME may be installed and removed, using non-JDD procedures (CAMS screens 45 and 46), if the actions are documented on AF Form 2430 or a similar product. **NOTE:** At Luke and Tyndall AFBs, the wing weapons manager will determine AME to be documented, using JDD procedures.

3.78.8. Designate select supervisors authorized to use non-JDD procedures (CAMS screens 45 and 46) for installing and removing AME in the automated MMS. **NOTE:** At Luke AFB, the armament flight chief will determine the quantity of individuals authorized in each section and approve individuals selected by the section chief.

3.79. AME Section Chief (at Luke and Tyndall AFBs). The section chief will develop an MOI or wing instruction, in coordination with the wing weapons manager and operations squadron weapons functions, to establish procedures for control and accountability of NIE and AME.

3.80. AME Responsibilities (All Bases). The AME function will:

3.80.1. Account for, store, and control AME.

3.80.2. Manage equipment on-hand levels in accordance with applicable allowance standards and -21-series TOs. **NOTE:** Units possessing equipment authorized by -21 TOs or allowance standards, but not required by the unit, may request disposition instructions from HQ AETC/LGMW. Additionally, units requiring equipment in excess of their authorizations will coordinate requests for increases through HQ AETC/LGMW.

3.80.3. List assets as SPRAM as required.

3.80.4. If applicable, develop and implement a program for documenting issues and receipts of in-use AME.

3.80.5. If applicable, pack or unpack assigned AME for storage or for delivery to the production section for inspection.

3.81. Armament Support Section Chief (at Luke and Tyndall AFBs). The armament support section chief at Luke and Tyndall AFBs will:

3.81.1. Develop master contents listings for armament CTKs. Ensure required technical data is available in sufficient quantities and ensure required test equipment and special tools and equipment are available and serviceable ([Chapter 19](#)).

3.81.2. Ensure LME not included in technical data or the Air Force LME pamphlet is approved for use (paragraph [3.82](#)).

- 3.81.3. Manage programs and maintain products, reports, and listings identified in **Chapter 17** that apply to the armament function.
- 3.81.4. Perform user calibration and maintenance on armament TMDE.
- 3.81.5. If established, manage forward supply points according to AFMAN 23-110, Volume 2.

3.82. Locally Manufactured Munitions Equipment (LMME):

3.82.1. LMME includes all tools and equipment that measure, test, or verify system, subsystem, component, or item integrity. HQ AETC/LGMW is the approving authority for all LMME in this category and, if applicable, will submit new LMME to HQ AETC/SEW and the Nonnuclear Munitions Safety Board for evaluation. A memorandum will be submitted through the squadron maintenance officer or superintendent, QA office, and wing safety with the following minimum information: a description of the test equipment and what it is used for, a list of materials, a wiring diagram and views of the completely assembled unit with wiring visible (if applicable), and the approximate cost (including labor and material). **NOTE:** Approved equipment should be considered for possible inclusion in the LMME pamphlet published by the munitions material handling equipment (MMHE) focal point--ASC AFSEO/SKZ, Eglin AFB FL. Units should consult this pamphlet or the MMHE web site (<https://wmnet.eglin.af.mil/mmhe>) before developing unit-unique equipment. Items listed in the LMME pamphlet or on the MMHE web site are considered preapproved and require no periodic review if instructions and diagrams are followed exactly.

3.82.2. LMME also includes handling dollies, storage racks (not storage shelves), maintenance stands, transport adapters, and/or tools used for armament-related equipment items (bomb racks, launchers, empty guns, etc.). It does not include simple adapter cables or plugs constructed as trouble-shooting aids to replace pin-to-pin jumper wires specified in technical data. Equipment in both of these categories may be approved locally through the squadron maintenance officer, QA, and wing safety. HQ AETC/LGMW will be provided with an information copy of the approved package for all equipment.

3.82.3. Approved items in all categories will be reviewed biennially by the QA office and wing safety. HQ AETC/LGMW must approve any changes or modifications to approved items.

Chapter 4

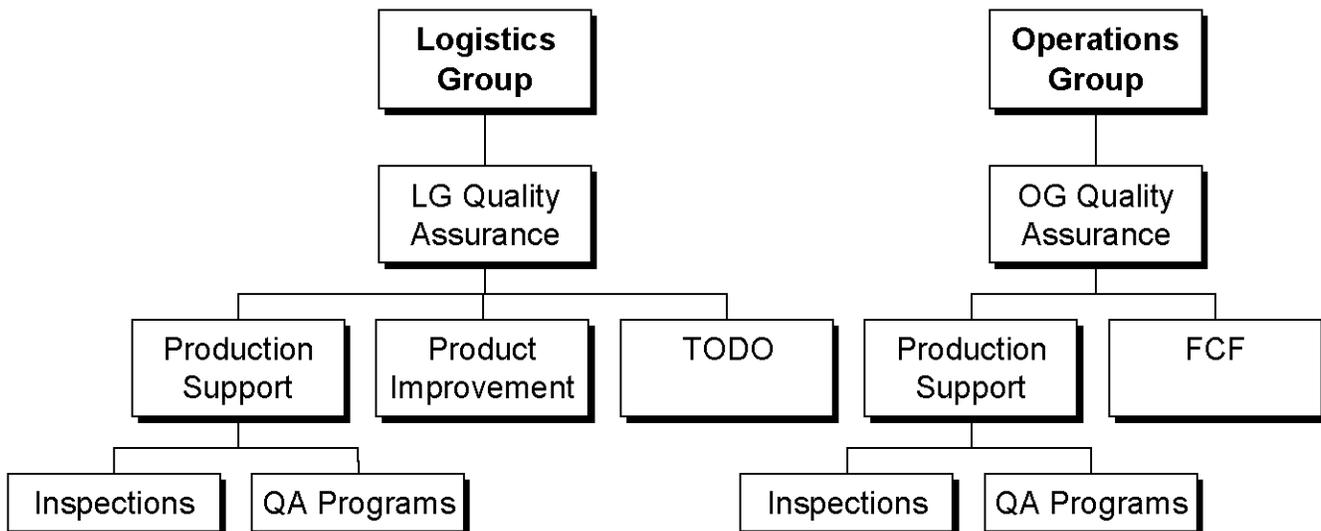
QUALITY MAINTENANCE

Section 4A—Quality of Maintenance

4.1. Purpose. The purpose of AETC quality maintenance is to provide flexibility, align the responsibility of quality at the appropriate level, and give management meaningful data to gauge quality and its impact on mission effectiveness. The quality maintenance program is divided into two interrelated categories, quality maintenance and certified mechanic (CM). **NOTE:** Civil service and contracted organizations will use the accepted quality program outlined in their respective contract. These units may request to adopt the program outlined in this chapter if they can do so at no cost to the government. Requests must be made through 19 AF/LGM or 2 AF/DO (as applicable) to HQ AETC/LGP.

4.2. Description. All commanders are accountable for the quality of maintenance performed within their respective organizations. In blue suit military organizations, commanders will be assisted in meeting their quality responsibilities by their group QA offices. (See [Figure 4.1.](#) for a chart of the quality maintenance organization.) In civil service and contract maintenance organizations, the maintenance authority is responsible to the group commander or wing commander (as specified in the SOW) for ensuring quality maintenance. Specific program responsibilities are detailed in [Section 4B](#) through 4E of this instruction. **NOTE:** The quality maintenance and CM programs are not applicable to PMEL and Keesler AFB trainer maintenance functions. For applicable quality programs, see TO 00-20-14 and paragraphs [3.61.](#) and [3.62.](#) of this instruction.

Figure 4.1. AETC Quality Maintenance Organization.



4.3. QA Offices. These staff organizations are the central point of contact for quality issues in maintenance. QAs report directly to their respective group commander and are assigned to the appropriate support squadron for administrative purposes ([Figure 4.1.](#)). Each QA (as applicable) should contain a sufficient number of personnel to support the following programs:

- 4.3.1. *(LG and OG)* Group activity inspection (paragraph 4.4.).
- 4.3.2. *(OG)* Functional check flight (FCF) (paragraph 4.5.).
- 4.3.3. *(LG and OG)* Use and control of locally developed job flow packages, forms, and lists (paragraph 4.6.).
- 4.3.4. *(LG)* Publication updates (paragraph 4.7.).
- 4.3.5. *(LG and OG)* Changes or waivers to this instruction (paragraph 4.8.).
- 4.3.6. *(OG)* Weight and balance program (paragraph 4.10.).
- 4.3.7. *(LG)* Aircraft crash recovery exercise program evaluation (paragraph 4.11.).
- 4.3.8. *(LG and OG)* Inprocess inspection program (paragraph 4.12.).
- 4.3.9. *(LG and OG)* Maintenance evaluations (paragraph 4.15.).
- 4.3.10. *(LG and/or OG)* QAP summary publication (paragraph 4.20.).
- 4.3.11. *(LG)* TCTOs, one-time inspections, and local workcards. The LG QA TODO function will serve as the focal point for TCTOs affecting equipment for which TOs are maintained in the master TO library. The LG QA TODO function will distribute TCTOs after the LG QA, OG QA, munitions, or PMEL determine the TCTOs are applicable. The PS&D function for the group owning the equipment then administers these programs according to **Chapter 12** of this instruction and AFI 21-101.
- 4.3.12. *(LG)* Central TO library and TODO function (**Chapter 12**).
- 4.3.13. *(LG and/or OG)* Emergency, mishap, and incident reporting (**Chapter 14**) (assisting wing safety).
- 4.3.14. *(LG and/or OG)* Product improvement program (**Chapter 20**).
- 4.3.15. *(OG)* Maintenance of the unit master AFTO Form 781 binder or MOI, which establishes standardized 781-series forms usage for all assigned aircraft (TO 00-20-5, Chapter 3).
- 4.3.16. *(LG and OG)* MOI program management. Review all group, squadron, or flight MOIs to ensure there are no conflicts with technical data or higher headquarters guidance.
- 4.3.17. *(LG and/or OG)* Wing impoundment program (paragraph 1.8.7. of this instruction and AFI 21-101).
- 4.3.18. Other programs. The appropriate group commanders may add other programs to the group QAs as long as they do not contradict other guidance.

Section 4B—Programs

4.4. Group Activity Inspection. This program is designed to provide senior maintenance managers (group commanders, squadron commanders, squadron maintenance officers, and superintendents) and functional managers (flight chiefs, flight commanders, section chiefs, and element chiefs, if assigned) with a tool to objectively assess the maintenance functions within their span of control. The group activity inspection will assess the various programs and activities within each maintenance function and serve in an advisory capacity to all levels of supervision. (The inspection equates to a local group-level staff assistance visit.) The LG and OG QAs:

4.4.1. Will assess the effectiveness of the maintenance process in each squadron, flight, or functional area and determine if QA maintenance evaluations are achieving intended results, samples are adequate to predict trends, and/or focus needs to be redirected. In addition, LG and OG QAs will assess those activities and programs within the group (such as PS&D, analysis, QA, etc.) that do not receive regular evaluation through the group evaluation plan and report results to the appropriate senior maintenance and functional managers. This is a continual process, but each area must be assessed at least annually. (The group commander may direct more frequent intervals, as required.)

4.4.2. May incorporate evaluations already done as part of the group evaluation plan or other internal evaluation measures. Personnel who are not normally assigned QA inspector or augmentee duties may be appointed to participate in the activity inspection. The key is to assess the maintenance evaluation process and provide an objective assessment of areas within the maintenance complex not observed on a regular basis under the group evaluation plan. The group commander will determine the scope of this inspection.

4.4.3. Will provide cross-tell information between unit maintenance functions, to include adverse trends, special interest items, lessons learned, cross-tell information from other bases, and procedural innovations that may be of value to other functions.

4.5. FCF Program:

4.5.1. FCFs, to include operational check flights (OCF), are performed to ensure an aircraft is airworthy and capable of accomplishing its mission. However, FCFs are not flown when the airworthiness of the aircraft can be determined by maintenance operational checks prescribed by a technical directive. Additional guidance may be found in AFI 11-401, *Flight Management*; AFI 11-202, Volume 3, *General Flight Rules*; AFI 13-201, *Air Force Airspace Management*; TO 1-1-300, *Acceptance/Functional Check Flight and Maintenance Operations Checks*; TO 00-20-5; and applicable -6 and -1 TOs.

4.5.2. The OG commander will appoint an officer in charge (OIC) for management and administration of the program. The FCF OIC will be FCF qualified in a unit mission aircraft, have attended the Aircraft Maintenance Officer Course (accelerated), have previous FCF experience, and able to serve as an instructor pilot in mission aircraft. The OG commander will review qualifications of all assigned crews and select highly qualified individuals.

4.5.3. The OIC and QA supervisor of FCFs will:

4.5.3.1. Develop appropriate FCF checklists and procedures and coordinate them with the QA and operations group stan/eval division.

4.5.3.2. Establish an FCF training and certification program.

4.5.3.3. Review FCF results on a continuing basis and recommend modified FCF criteria and procedures.

4.5.3.4. Work with maintenance and operations in the areas of flying safety, standardization, and operational maintenance priorities for the FCF program.

4.5.4. The OG QA function will:

4.5.4.1. Ensure the FCF crew is briefed (all FCFs, to include OCFs) on the purpose and extent of the flight, previous maintenance problems, and discrepancies recorded on the aircraft or engines related to the FCF.

- 4.5.4.2. Review aircraft weight and balance documents.
- 4.5.4.3. Ensure AF Form 2400, **Functional Check Flight Log**, or an automated product is maintained to provide information for evaluation and analysis. Include the date and time of the FCF, aircraft serial number, reason for FCF, and name of debriefer and aircraft commander. The form will also indicate if the aircraft was released for flight, reasons for any nonrelease, action taken and date completed, and date maintenance documents were forwarded to PS&D.
- 4.5.4.4. Debrief all FCFs at the appropriate debrief function.
- 4.5.5. Each FCF program manager will:
 - 4.5.5.1. Establish local FCF procedures (jointly developed by maintenance and operations) for local aircraft requirements (configuration), administration, control, and documentation of the FCF, OCF, and high-speed taxi check programs.
 - 4.5.5.2. Coordinate with the appropriate squadron for an FCF pilot or crew and provide squadron operations with the following information: aircraft tail number, reason for the FCF, and anticipated takeoff time.
 - 4.5.5.3. Maintain an information file for briefing flight crews. As a minimum, the file must contain unit directives concerning FCF procedures, authorization lists for FCF crews, and FCF checklist for each type of assigned aircraft.
 - 4.5.5.4. Ensure an FCF checklist is used for each FCF. The QA or designated representative will debrief all FCFs at the appropriate debrief function. During debriefing, the FCF checklist and aircraft forms will be reviewed to determine if all requirements have been accomplished. Each discrepancy discovered during the FCF will be documented on AFTO Form 781A. After completion of the review, the checklist will be sent to PS&D for inclusion in the aircraft jacket file.
 - 4.5.5.5. Maintain a copy of the AF Form 2400 or automated product for deficiency and trend analysis.
 - 4.5.5.6. Collect and prepare FCF results according to AETCI 21-105. Additional FCF information (for example, reason for FCF, date of FCF, attempt number, reason for nonrelease, and corrective action for nonreleased aircraft) may be included in the local QAP summary.
- 4.5.6. The section owning the affected aircraft will accomplish the following:
 - 4.5.6.1. Configure the aircraft for an OCF or FCF according to local directives.
 - 4.5.6.2. Ensure maintenance actions are completed and AFTO Forms 781 are documented properly. In addition to a valid preflight, a basic postflight inspection must be accomplished if the aircraft has not flown in the past 30 days. **NOTE:** Accomplishing a combined preflight/BPO meets this intent.
- 4.5.7. Maintenance actions on transient aircraft requiring FCF will be reviewed by QA prior to an FCF. For aircraft types other than those assigned, the owning unit will provide a qualified FCF pilot or crew. QA will assist as needed in coordinating with the deployed aircraft commanders and their home station to acquire a FCF pilot or crew.
- 4.5.8. The mandatory flight requirements for an FCF are outlined in TO 1-1-300 and applicable -6 TO. A full profile FCF will be flown at the discretion of the FCF OIC. The FCF profile will be tailored for the discrepancy causing the FCF and apply the following guidance:

4.5.8.1. Fly FCFs for a single-engine change on a two-engine aircraft if that aircraft will next fly an extended over-water flight (for example, overseas deployment). This applies to engines with no operating time since major maintenance. It does not apply to engines obtained from a donor aircraft with an established operating time.

4.5.8.2. Require a clean configuration whenever FCFs are flown for flight controls, fuel controls, or engine changes. Do not remove fixed wing pylons, fixed wingtip tanks, and fixed external stores unless they interfere with fuel scheduling, aerodynamic reaction, air loading, signaling propagation, etc.

4.5.8.3. Do not fly FCFs in conjunction with other missions or training requirements unless waived by provisions in TO 1-1-300.

4.5.8.4. Follow weather conditions contained in TO 1-1-300 at all times unless aircraft are urgently required for operational commitments. **NOTE:** Waiver provisions are outlined in TO 1-1-300 for the type and model of aircraft involved.

4.5.9. Units will establish and publish local OCF procedures. OCFs will be flown by highly experienced aircrews and will be accomplished following the same criteria as FCFs. OCFs will be flown when an operational check is not listed as a -6 TO FCF requirement and *either* of the following conditions exist:

4.5.9.1. Test equipment does not exist to perform the OCF on the ground.

4.5.9.2. An in-flight OCF is required.

4.5.10. An FCF release occurs upon the successful completion of all requirements as determined by the FCF aircraft commander. The final decision as to whether the flight was an FCF attempt and counted as a release or nonrelease rests solely with the aircraft commander. Rotary-wing aircraft encounter certain FCF requirements, such as blade balancing, that may require multiple sorties to accomplish a single FCF. These multiple sorties should be considered one attempt with the following exceptions:

4.5.10.1. If the aircrew must be changed (all crewmembers) during the multiple-sortie FCF, the attempt will be terminated and coded as a "nonrelease," a new aircrew will be debriefed, and a new attempt will be initiated.

4.5.10.2. If the multiple-sortie FCF does not release by the end of the flying day the attempt will be terminated and coded as a "nonrelease" and a new attempt will be initiated the next day.

4.5.10.3. In order for the multiple-sortie FCF scenario to apply, the need for multiple sorties to accomplish the FCF must be identified in either the unit's FCF MOI or the aircraft's -6, TO or specified during the FCF briefing.

4.5.11. An FCF conditional release may occur when an aircraft completes all FCF requirements, but a specific system malfunction not associated with the system generating the FCF is detected and the FCF aircraft commander (in consultation with maintenance) determines the malfunction may be corrected without generating another FCF. If, on review of the corrective action, the FCF aircraft commander accepts the maintenance action as a satisfactory repair of the malfunction, he or she may conditionally release the aircraft from FCF. For example, the aircraft FCF is for engine low power and all engine systems check out with the exception of an engine oil pressure fluctuation. Maintenance troubleshoots fluctuation and determines the cause as a defective oil pressure transmitter.

4.5.12. Perform high-speed taxi checks with FCF aircrews according to applicable aircraft maintenance TOs and MAJCOM directives. To minimize brake and tire wear, configure the aircraft with the minimum fuel practical to accomplish high-speed taxi checks. Ensure the aircraft is prepared for flight and enough fuel is on board to execute a takeoff, normal pattern, and landing with applicable reserves if unexpected circumstances require takeoff.

4.5.13. All ground aborts result in a "nonrelease." An aircraft may be released for flight if a malfunction occurs during an FCF that is not related to the condition generating the FCF and the original condition checks good.

4.6. Use and Control of Locally Developed Job Flow Packages, Forms, and Lists. Each group commander has the option of using locally developed job flow packages for aircraft, trainer, or SE forms and locally developed forms or lists to record recurring maintenance tasks. Job flow packages created in the automated MMS will provide fully integrated and annotated electronic preprints to these recurring tasks. If this option is used:

4.6.1. Locally developed maintenance packages or job flow packages should be developed in the automated MMS for recurring maintenance tasks where the requirements of the action are normally constant. (**NOTE:** The 21st Fighter Squadron [FS] and the 425th FS are exempt from the requirements of an automated MMS.) Examples of such tasks include, but are not limited to, PE, phase, and ISO inspections; engine removal and reinstallation; aircraft wash and lubrication; aircraft complete strip and paint; and wing removal and reinstallation. These automated job flow packages will be scheduled in CAMS or G081 and new AFTO Forms 781A will be printed as needed. Only units without CAMS or G081 are authorized to use preprinted manual AFTO Forms 781A, 781J (**Aerospace Vehicle-Engine Flight Document**), and AFTO 781K or AFTO Forms 244 and 245.

4.6.2. Locally approved forms or lists may be used to record removal of access panels from aircraft or SE undergoing inspection or extensive recurring maintenance; for example, scheduled inspections (TO 00-20-5), wing removal and replacement, flight control rigging, TCTO compliance, etc. If a consolidated list of access panels is used, an entry on the AFTO Form 781A, stating its use, is required. Locally approved forms or lists will have a date on each page so previous versions can be easily identified and purged.

4.6.3. The LG and OG QA will publish joint guidance in a wing instruction or MOI to ensure proper use, control, and documentation of locally developed job flow packages and local forms and lists. As a minimum, QA will review all job flow packages prior to their input into the CAMS or G081 by PS&D. Locally approved forms or lists require QA coordination and approval prior to use. QA will assign an individual control number to each approved form or list, maintain an inventory of forms and lists used within maintenance, and review and update locally approved job flow packages, forms, and lists at least annually.

4.7. Publications Updates. The TODO function within the LG QA will review incoming new or revised TOs and technical manuals to determine their applicability to assigned equipment (LG and OG assets) and inform applicable flights and sections of these publications. This information may be distributed by quality newsletters, but it must be included as information in the published weekly schedule.

4.7.1. Conflicts between the same types of publications (for example, two AETC maintenance instructions) will be resolved in favor of the publication with the most recent date.

4.7.2. Conflicts between administrative and technical publications will be resolved in favor of the technical publication.

4.7.3. Conflicts between directives that cannot be resolved locally will be brought to the attention of HQ AETC/LGM.

4.8. Changes and Waivers to This Instruction. Recommended improvements or problems in implementing this instruction that cannot be resolved locally should be annotated on AETC Form 1236--the only form to be used for this purpose. The maintenance function will prepare the form in an original and one copy and forward it to the appropriate QA for review and assignment of a control number. Before forwarding the change proposal to the group commander, the QA will ensure coordination is maintained with the opposite QA. After approval by the group commander, the QA will forward the original to HQ AETC/LGMMP, maintaining a copy until action has been taken by HQ AETC/LGM.

4.9. Acceptance and Transfer Inspections:

4.9.1. These are required inspections performed on assigned aircraft, engines, trainers, and SE that depart for, or return from, assignment to other installations and/or major maintenance programs such as programmed depot, including maintenance and contract field teams (TO 00-20-1).

4.9.2. Minimum command inspection requirements include accomplishment of the applicable weapon systems BPO or SE serviceability and calibration inspection; -21 TO equipment inventory; review of weight and balance documents for accuracy (paragraph 4.10.); aircraft or SE document review; and any other requirements as determined by the aerospace equipment lead command.

4.9.3. When gaining an aircraft or equipment from another unit, AETC units should contact the losing organization to try to set up a combined acceptance and transfer inspection at the losing organization's location. Once the acceptance portion of the inspection is complete, any discrepancies discovered at the gaining AETC unit's location will be the responsibility of the gaining unit. The owning flight or section is responsible for these inspections. Detected discrepancies attributable to depot maintenance (organic or contracted) will be processed as prescribed in **Chapter 21** of this instruction and in TO 00-35D-54.

4.10. Weight and Balance (W&B) Program:

4.10.1. The OG Commander, LG Commander (for units under centralized maintenance), or civilian equivalent (in contract or civil service organizations) will appoint a QA to be the unit W&B program manager. The program must maintain strict accounting of aircraft W&B for safe flight operations. Each unit will manage its W&B program to ensure accurate inventories of aircraft weight.

4.10.2. The W&B program manager will ensure compliance with appropriate TO procedures for weighing aircraft. Squadron W&B technicians will help the W&B program manager carry out his or her responsibilities. Each W&B technician will verify scale readings, perform the actual computations, and supervise the preparation, leveling, and weighing of the aircraft. The W&B program manager will ensure:

4.10.2.1. Sufficient personnel are qualified on assigned aircraft according to TO 1-1B-50, *Basic Technical Order for USAF Aircraft Weight and Balance*.

4.10.2.2. W&B inventories are completed according to applicable directives. W&B inventories are also completed upon return to home station from any ALC or contractor facility where exten-

sive maintenance was performed. W&B inventories will be completed prior to the first flight after arrival.

4.10.2.3. All assigned aircraft are weighed according to applicable directives. W&B documents required by TO 1-1B-50 will be maintained for each assigned aircraft. If approved, an automated W&B system will be used. If an approved automated W&B system is used, a backup copy of all W&B documents will be maintained.

4.10.2.4. Procedures exist for routing completed TCTO and modification information for W&B changes.

4.10.2.5. Inspection of W&B documents before flight when locally accomplished modifications affect the basic aircraft weight and moment. Computations will be reviewed for accuracy.

4.10.2.6. Essential W&B data and changes to the basic weight and moment are available for appropriate mission planning.

4.10.3. W&B handbooks for class I and II aircraft are kept in a central file.

4.11. Aircraft Crash Recovery Exercise Evaluations. LG QA (OG QA for Kirtland AFB) personnel will serve as evaluators during aircraft crash recovery exercises. They will develop checksheets listing the sequence of critical actions, TO use, and training documentation. As a minimum, exercises should contain evaluation of aircraft lifting procedures and -2 and -3 TO preparatory actions. These exercises will be performed annually for each type of aircraft possessed (two MDS for the 97 AMW) and will be planned and coordinated through the wing plans office. **NOTE:** Although units with C-17, C-21, and T-43 aircraft do not perform crash recovery exercises, CLS will provide T-43 crash recovery support when needed.

4.12. In-Process Inspections (IPI). In coordination with flight chiefs, flight commanders, squadron maintenance officers and superintendents, squadron commanders, and QA, the group commander will determine maintenance tasks for each aircraft, trainer, and/or support system that require IPIs. An MOI will be published to identify those maintenance tasks and prescribe the WUC, nomenclature, and specific inspection requirement for each IPI. The LG or OG QA will validate IPIs annually. IPI documentation for on- and off-equipment maintenance will be accomplished according to TO 00-20-1/AETC Sup 1.

Section 4C—Quality Assurance Program (QAP)

4.13. Purpose. The QAP is a formal program designed to measure personnel skill; sample equipment condition; foster alertness and immediate response to unsafe aspects of the maintenance environment; and periodically evaluate maintenance management. This is accomplished through technical and personnel evaluations. Maintenance quality is the responsibility of all maintenance technicians, supervisors, and commanders. The QAP's objective is to evaluate maintenance process compliance and equipment condition. This program provides an avenue for determining the root cause of a failed process and allows quality review by flight quality tiger teams or functional working groups to determine suggested corrective actions. It is administered at the group level to allow group commanders the flexibility of focusing the evaluation effort on problem areas.

4.14. QA Inspectors. Only highly qualified and motivated 7- or 9-skill level maintenance personnel will be selected to serve as QA inspectors. Inspectors may be designated to manage specific QA programs as long as accomplishment of these duties does not interfere with their ability to accomplish the group eval-

uation plan. Inspectors must receive inspector training and certification within 2 months of their assignment as an inspector as follows:

4.14.1. Inspector Training. QA inspectors will attend either the formal Quality Assurance Inspector Course or they will attend a local training and certification program developed by the group QA office to instruct QA inspectors in proper evaluation techniques. This training should include evaluation procedures for both technical and personnel evaluations. A course code to identify certified inspectors will be entered in CAMS. (Consider inclusion on the special certification roster.)

4.14.2. Inspector Augmentees. Selected personnel within the maintenance organization may be designated as inspector augmentees to help QA inspectors accomplish the group evaluation plan, as established by the group commander. The use of augmentees should be limited to areas for which QA does not have sufficient expertise to adequately evaluate the area. Augmentees must receive the same training and certification as QA inspectors. Identified inspector augmentees may also be tasked to participate in the group activity inspection.

4.15. Maintenance Evaluation. A maintenance evaluation will be conducted on personnel or equipment following or during ground handling, servicing, maintenance, inspection, repair actions, or other TO-directed tasks. The same technical data required to complete the task will be used to perform the evaluation. Normally, this evaluation does not require disassembly of parts, removal of stress panels, power on, or like actions. The maintenance evaluation for -6 TO inspections may be done by evaluating a portion of the workcards or areas, as determined by the group commander.

4.15.1. A process is defined as the flow of work; that is, the logical organization of people, material, energy, equipment, and procedures. The process is the entire series of events required to achieve an end result; therefore, it is broken when a step, procedure, or act negatively impacts that end result.

4.15.2. In coordination with their respective QAs, squadron commanders, and squadron maintenance supervisors and superintendents, group commanders will determine their group's evaluation requirements and develop a group evaluation plan. This plan will include appropriate samples of maintenance processes, as well as equipment condition and maintenance actions, to adequately evaluate the quality of maintenance performed throughout the group. The group evaluation plan should also include the quantity of evaluations performed by group QA, to include areas to be evaluated and frequency. In their evaluation plan, units may elect to develop and include a baseline of minor discrepancies for different evaluation categories that would constitute a broken process.

4.15.3. The following are minimum monthly evaluation areas, as applicable, with the frequency, specific tasks, and number of evaluations to be determined within the group evaluation plan: (**NOTE:** To meet the intent of this paragraph, contract and civil service maintenance organizations will adhere to the quality assurance plan established and accepted according to their applicable SOW or PWS.)

4.15.3.1. Aircraft inspections (preflight, BPO, combined BPO/preflight, HSC, thru-flight, HPO, ISO, PE, Phase).

4.15.3.2. Servicing (liquid and gaseous).

4.15.3.3. Ground-handling (towing, jacking, mooring, etc.).

4.15.3.4. Section-specific tasks; that is, specific tasks performed by each separate section or maintenance function (for example, engine installation, document file review, and engine bay inspection).

- 4.15.3.5. Wash and corrosion control (aircraft and SE).
- 4.15.3.6. AGE; that is, PEs, preuse, use, and equipment condition evaluations.
- 4.15.3.7. User-maintained TMDE.
- 4.15.3.8. Weapons, including weapons task qualification operations, installation and removal of armament suspension equipment, -6 inspections, etc.
- 4.15.3.9. Armament (inspection and maintenance of armament equipment).
- 4.15.3.10. CTK program (proper tool control and accountability).
- 4.15.3.11. Foreign object (FO) inspection (samples of SE, CTKs, maintenance actions, maintenance sections etc.).
- 4.15.3.12. Munitions (buildup, maintenance, accountability, and munitions material handling equipment [MMHE] serviceability).

4.16. Conducting a Maintenance Evaluation. QA inspectors will evaluate maintenance processes to determine if assigned aircraft and equipment are maintained according to published technical data and directives. Maintenance evaluation findings should be aimed at discovery and correction of root causes, not at the symptoms of process failures.

4.16.1. Minor Versus Major Defects. Evaluation findings or defects should be categorized according to their severity as follows:

4.16.1.1. Minor findings or defects are incurred when one or more steps in the process are inefficiently accomplished or directed, but the end result is achieved. These are deviations to the process that should have been detected, but would not affect the performance or safety of the equipment involved.

4.16.1.2. Major findings or defects are incurred when any discrepancy is discovered that renders the equipment involved unsafe for flight or use. These deviations would warrant entering a Red-X in the equipment forms. The equipment will not be flown or used until the unsatisfactory condition is corrected.

4.16.2. Process Categories. Three categories of processes will be used to indicate evaluation results (excellent, satisfactory, and unsatisfactory) as follows:

4.16.2.1. Excellent. All steps in the process were accomplished according to technical data and directives, and the required end result was accomplished (that is, ontime aircraft departure or mission completion).

4.16.2.2. Satisfactory. One or more minor findings or defects were detected during the evaluation, and safety and mission accomplishment was not jeopardized.

4.16.2.3. Unsatisfactory. At least one of the following was discovered during the evaluation:

- 4.16.2.3.1. One or more major findings or defects.
- 4.16.2.3.2. An improperly completed inspection or maintenance action.
- 4.16.2.3.3. Nonuse of technical data or other safety violation.

4.16.2.3.4. A required TO procedural item was missed or improperly completed that would have effected the performance of the equipment involved.

4.16.2.3.5. Any unsafe condition.

4.16.2.3.6. The baseline of minor findings or defects for the specific task was exceeded (if this option was used and incorporated into the group evaluation plan).

4.16.2.3.7. The end result was not achieved (that is, the mission was not met). **NOTE:** An inspector identifying a process as unsatisfactory will attempt to annotate whether the process failure was attributable to inadequate or incorrect training, local MOIs, technical data, tools, FOD, AFOSH or other safety program guidance, instructions, or some other cause.

4.17. General Reporting Instructions. The group commander may use AF Forms 2419, locally approved forms, or automated products to document maintenance evaluations. (If an AF Form 2419 is used, comments and corrective actions on the back of the form are not required.)

4.17.1. As a minimum, documentation will include the number of employees involved in the process, date, evaluator's name, section or element, type of evaluation, narrative of the findings, process rating, probable cause of unsatisfactory processes, and suggested corrective actions.

4.17.2. Aerospace equipment discrepancies discovered during maintenance evaluations will be documented on the appropriate maintenance forms.

4.17.3. The routing of the internal maintenance evaluation report (within the group) will be determined locally.

4.17.4. Maintenance evaluation findings noting safety or TO violations and/or discrepancies will always be reported immediately to the applicable flight chief or flight commander for appropriate supervisory action.

4.18. Quality Review:

4.18.1. Each maintenance evaluation receiving a rating of satisfactory or unsatisfactory should be considered for quality review by flight quality teams. Flight chiefs and section chiefs will determine which of these processes will be referred to the quality teams for review. Quality review involves using quality Air Force principles to determine root causes (such as tools, training, technical data, work conditions, or the process itself) of unsatisfactory or poorly working processes and recommending solutions or fixes to these processes.

4.18.2. Quality review of maintenance evaluations allows workers who accomplish the subject processes to suggest corrective actions, thereby attaining ownership of the process and the solution. Once flight quality teams have reviewed the processes and suggest corrective actions, the process report will be forwarded to the flight chief and flight commander for approval. Approved process solutions will then be forwarded to QA for inclusion in the QAP summary and filing.

4.19. Filing and Disposing of Reports. The applicable group QA will file and dispose of maintenance evaluation reports or summaries according to AFMAN 37-139.

4.20. QAP Summary:

4.20.1. The LG and OG QAs, in coordination, will publish a QAP summary (or the equivalent report specified in the appropriate SOW or PWS) to provide management with trend information identified through evaluations and other quality maintenance programs. The summary will clearly indicate those areas that should receive increased attention; that is, an analysis of negative trends should identify common problem areas for management action.

4.20.2. The summary will contain new approved process improvements developed by flight quality teams concerning unsatisfactory processes identified during maintenance evaluations, and it may include FCF trend analysis, release rates, and common recurring problems. The summary will also contain information in support of the quality maintenance program, product improvement program, and other quality assurance programs.

4.20.3. The scope and interval of the QAP summary will be determined through coordination between the OG and LG commanders. As a minimum, the interval of the summary will coincide with the quarterly maintenance quality meeting.

Section 4D—Certified Mechanic (CM) Program

4.21. Overview. The CM program is optional. (If used, the program will be initiated by the group commander.) This section establishes requirements and criteria for AETC's CM program. (Contractor maintenance organizations may implement this program, but at no cost to the government.) The CM program applies to functions performing maintenance on aircraft or aircraft-related equipment including, but not limited to, AGE, life support equipment, and -21 TO equipment. The group commander will publish an MOI to specify local task exemptions or task listings, local training requirements (by aircraft type), specific responsibilities and privileges, and any local certification criteria beyond that stated in this instruction. **NOTE:** This program does not apply to PMEL personnel.

4.22. Responsibilities and Privileges:

4.22.1. Only technicians who have demonstrated exceptional knowledge, personal and team responsibility, and personal integrity and who have attained a high quality and consistent duty performance and a high degree of dependability can become CMs and certified master mechanics (CMM). Selection criteria is based on the whole-person concept. Certification must not be taken lightly or for granted; CMs and CMMs must understand they are solely responsible for the maintenance they perform and sign off.

4.22.2. There is no minimum or maximum number of individuals who may be qualified under this program (no quotas). The appointment of an individual to CM or CMM status is a career milestone and will be treated as such. That is, each unit will initiate a procedure to formally certify and recognize each individual by an appropriate appointment ceremony, a certified mechanic oath, and a certificate. **NOTE:** All certificates must be developed as local forms and processed according to AFI 33-360, Volume 2/AETC Sup 1, *Forms Management Program*.

4.23. Appointment to CM. CMs must be 5-, 7-, or 9-skill level technicians (or civilian equivalents) who demonstrate a commitment to quality maintenance and are willing to accept responsibility and accountability for all maintenance performed. Once certified, technicians may sign off Red-X tasks they perform without followup inspections *only* within the scope of their primary AFSC (or duty description for civilian personnel). Five-level CMs may only sign off Red-X tasks they perform.

4.24. Appointment to CMM. CMMs will be 7- or 9-skill level CMs (or civilian equivalents) authorized to sign off Red-X entries without followup inspections on tasks they perform within their AFSC (or duty description for civilian personnel) and selected tasks outside their primary AFSC (or duty description for civilian personnel) as identified in their training records. Additionally, CMMs (when granted Red-X and IPI certification within their PAFSC and limited Red-X certification outside their PAFSC) may inspect and signoff Red-X entries for work performed by other technicians on all tasks the CMM is certified to perform. **NOTE:** Training records need not be maintained for MSgt 7-skill level or higher technicians, except when in training status, but AF Form 797, **Job Qualification Standard Continuation/Command JQS**, will be kept on file to show CMM certification on tasks outside the individual's primary AFSC.

4.25. Certification Process. Comply with requirements in AFI 21-101.

4.26. Certification Review Board. The CM and CMM certification review board composition, scope, and procedures will be determined locally by the applicable group commander. As a minimum, comply with AFI 21-101.

4.27. Training. No specific training is required for CMs beyond those mandatory 5-level tasks listed in their training records. CMMs must meet all mandatory 7-level tasks in their training records as well as local task requirements determined by the group commander. Local training plans and procedures are encouraged because training is the key to maintaining the integrity of CMM status. For CMMs, use AF Forms 797 for documenting task certification or qualification outside their PAFSC or job description and file the form with their training records as required.

4.28. Decertification or Recertification:

4.28.1. Flight chiefs and commanders or section chiefs will decertify technicians any time their performance or reliability warrants this action, such as deterioration of work quality, improper performance, or personal issues (financial irresponsibility or criminal proceedings). Once decertified, technicians will not exercise the prerogatives of a CM or CMM and will require followup inspections of Red-X conditions. Furthermore, these technicians will not perform decertified tasks until satisfactory retraining and task certification is completed.

4.28.2. CM or CMM recertification will be done according to initial certification procedures. Consider removing technicians from CM or CMM status when they are reassigned to a work center that does not require CM or CMM responsibilities or makes the technician unable to maintain technical proficiency (for example, QA MOC, debrief, TODO etc.). **NOTE:** CMs or CMMs reassigned from other bases, commands, or organizations possessing the same MDS may be recertified at the new location based on the supervisor's examination of the proof of certification from the CM's or CMM's previous duty assignment.

4.29. Tasks Not Included in the CM Program. The following tasks will require two inspections and two signatures:

4.29.1. Those requiring IPIs, whether directed by TOs, MAJCOM procedures, or local procedures (AFI 21-101).

4.29.2. Those regarding egress systems.

4.29.3. Those that will generate an FCF on fixed-wing aircraft according to the aircraft -2 or -6 TOs.

4.29.4. Those locally identified by the group commander (paragraph [4.21.](#)).

PART 2

MAINTENANCE MANAGEMENT PROGRAMS

Chapter 5

PLANNING

5.1. Operational Planning. Planning is accomplished to ensure the optimum use of aircraft and equipment and to ensure scheduled and unscheduled maintenance requirements are completed. Plans and scheduling (P&S) develops the unit's maintenance and utilization plans and ensures coordination with operations. Specifically, AETCI 21-104 prescribes procedures for maintenance and operations in the planning and scheduling of mission requirements.

5.2. Planning Sources. Use the following sources of information to build maintenance plans and schedules: operational utilization plans, automated MMS reports, depot and Queen Bee input and output schedules, and aircraft transfer schedules.

5.3. Maintenance Planning. Planning is a four-phase process. The first phase is the development of a long-range plan beginning with the current month and reaching out 2 months into the future. The second phase is the refining of the long-range plan into a monthly plan. In the third phase, each weekly portion of the monthly plan is further refined to produce a weekly schedule. The last phase of the planning process is to verify maintenance, training, and operational requirements and finalize the daily portion of the weekly schedule. Further details of the four phases of maintenance planning are as follows:

5.3.1. Long-Range Quarterly Planning:

5.3.1.1. The development of a long-range quarterly plan is the basis for all other phases of the planning process, and it must be as accurate and detailed as possible. This plan will be developed either on a roll-chart board and/or AF Form 2401, **Equipment Utilization and Maintenance Schedule** (or an automated product), and it must be accessible at all times.

5.3.1.2. Development of a new plan will be started at the beginning of each month. Initial maintenance actions identified on this plan will be generally limited to major actions, including PE, phase, or ISO inspections; depot or Queen Bee inputs and outputs; aircraft transfers and gains; aircraft washes and paints; -6 TO calendar and hourly special inspections; time changes; TCTOs, engine removals and changes; deferred discrepancies requiring extensive maintenance; training; and local requirements.

5.3.1.3. All the information needed to build this plan will not be available at the beginning of its development. However, as requirements are identified, they should be added. Adjustments to the plan will have to be made periodically to ensure the most economical use of resources, while enabling the support of operational commitments. A proactive long-range scheduling process will result in the development of an accurate and useful monthly maintenance plan.

5.3.2. Monthly Planning:

5.3.2.1. Monthly aircraft maintenance and utilization planning is a continuation and refinement of the long-range planning process plus the addition of aircraft sorties, as identified on AETC Form

206, **Monthly Flying Contract**. Annotate all utilization and maintenance actions on an AF Form 2401.

5.3.2.2. Other required contents of the monthly utilization and maintenance plan are contract or depot maintenance, corrosion control, and engine in-shop inspection and maintenance requirements. Engine requirements are fulfilled by completing AETC Form 520 according to Chapter 1, **Section 1F**, of this instruction. Other items as directed by the wing commander may be added to the monthly plan.

5.3.2.3. The plan may be published as a monthly plan or as an annex to the last weekly plan of the preceding month. Once signed by wing, OG, and LG commanders, the monthly plan becomes the monthly contract. (The wing commander will establish a distribution policy for the monthly plan.)

5.3.3. Weekly Maintenance and Utilization Planning. Weekly planning will further refine the monthly plan and is the basis for deviation reporting (AETCI 21-104).

5.3.3.1. Adjustments to the monthly plan will be made during the weekly process to compensate for uncompleted maintenance actions, high or low sortie attrition, short notice maintenance requirements, etc. Operations and maintenance schedulers should coordinate regularly when developing the weekly schedule to ensure both utilization and maintenance actions can be supported. The weekly schedule will be signed by wing, OG, and LG commanders. It will be distributed to each appropriate activity and work center by 1400 on Friday proceeding the effective week.

5.3.3.2. AF Form 2402, **Weekly Equipment Utilization and Maintenance Schedule**, or any other locally approved form will be used for the weekly schedule.

5.3.3.3. As a minimum, the weekly utilization and maintenance schedule will include:

5.3.3.3.1. Scheduled utilization and maintenance actions by aircraft and equipment serial number, to include sortie line number; PE, phase, ISO, HPO, HSC, and -6 TO calendar and hourly special inspections; TCTOs; contract and depot inputs and outputs; engine changes; component time changes; washes; corrosion control; and document reviews.

5.3.3.3.2. Required preinspections and other maintenance meeting schedules.

5.3.3.3.3. AGE inspection schedule.

5.3.3.3.4. Estimated requirements for POL when required, to include number of trucks, refueling pits, and times required.

5.3.3.3.5. A list of new or revised technical data, as provided by LG QA for information.

5.3.3.3.6. Aircraft and equipment required to support training requirements.

5.3.3.4. Engine management (EM) will process the AETC Form 520 as shown in **Chapter 1, Section 1F**, of this instruction.

5.3.4. Daily Maintenance and Production Planning. Daily planning will be to finalize the daily portion of the weekly schedule. The OG, LG, DOM, or designated representative will chair the meeting, and the OSS PS&D or civilian equivalent will serve as the OPR. The purpose of the meeting will be to verify aircraft and equipment utilization, scheduled maintenance requirements for the current day and following day, establish work priorities, and coordinate scheduling changes. Items to be discussed will include, but not be limited to, deviations from the previous day's flying schedule, the next

day's flying and maintenance requirements, any uncompleted scheduled maintenance, depot and contract field team (CFT) inputs or returns, shared resource maintenance requirements, scheduled TCIs, TCTOs, special inspections, and the incorporation of unscheduled maintenance. Prior coordination between maintenance and operations schedulers will ensure known requirements and changes are discussed.

5.4. Maintenance Scheduling Effectiveness. Maintenance scheduling effectiveness will show LG and OG commanders how well their organizations are executing the weekly maintenance schedule. P&S will compute maintenance scheduling effectiveness by measuring the degree to which scheduled actions in the weekly maintenance schedule are accomplished. The presentation for the last weekly schedule of the month will also include the cumulative rating for the month. Maintenance scheduling effectiveness will be computed and reported according to AETCI 21-105.

Chapter 6

FLEET TIME MANAGEMENT

6.1. Planning Procedures for Annual Fleet Time Management. Fleet time management is only applicable to aircraft using hourly based phase or PE inspection programs. Aircraft using the ISO inspection concept are exempt from complying with this chapter. However, all aircraft, regardless of their inspection method, can benefit by balancing the flying commitment among the entire fleet.

6.1.1. Fleet time is the average number of flying hours per aircraft remaining to next the scheduled inspection. Plan the annual inspection dock flow to parallel the annual flying hour program as closely as possible, using the total PE or phase inspections required for the fiscal year. A prudent plan considers current fleet time posture and number of required inspections based on the flying hour program and the unit's desired fleet time posture. Large month-to-month fluctuations in the annual flying hour program should be balanced with inspection hours produced over a 2- or 3-month period. This procedure will help eliminate the accordion effect of spreading and bunching aircraft PE hours on the automated MMS TDI report.

6.1.2. Spreading and bunching flying hours between aircraft creates the possibility of several aircraft running out of inspection hours at close to the same time. This will cause a PE dock backlog or not having any aircraft with low enough PE hours remaining until inspection, leaving the dock empty for a period of time and causing the average fleet time to drop. The key to success is managing individual aircraft flying hours, ensuring an equal mix of long and short deck inspections, and using realistic planning factors.

6.2. Goal. The goal of fleet time management is to ensure a balanced inspection dock flow that will support the AETC programmed allocation (PA), (the official flying hour allocation document) flying hours without over- or under-tasking dock resources.

6.3. Fleet Time Computations. Average fleet time will be computed and reported according to AETCI 21-105. Compute PE or phase inspections by dividing the PA by the inspection interval. To identify the total number of PE or phase inspections required for the coming fiscal year, take the annual PE or phase inspections required to support the PA, plus or minus the inspections required to align the average fleet time at the beginning of the fiscal year with the AETC required minimum average.

6.4. Inspection Scheduling. Aircraft will be input into inspection according to the + (plus) or - (minus) standards designated in their appropriate -6 TO.

Chapter 7

TIME CHANGE ITEM (TCI) MANAGEMENT

7.1. TCI Responsibilities. The PS&D function will identify, monitor, project, and schedule aircraft-installed TCI requirements into maintenance plans. The engine management (EM) function will identify, monitor, project, and schedule engine life limited component TCI requirements into maintenance plans. Accurate TCI forecasting is critical to ensure item availability prior to components' due date or scheduled replacement date. Schedulers will forecast those items specifically identified in TO 00-20-9, applicable commodity TOs, and aircraft -6 TO.

7.2. TCI Recording:

7.2.1. The PS&D will monitor and track aircraft-installed TCIs, and EM will monitor and track engine TCIs in the approved automated MMS. **NOTE:** After maintenance validation, PS&D will load, change, or correct TCI data on aerospace equipment on or during acceptance; that is, transferred from another unit or depot or speedline return.

7.2.2. Each performing work center supervisor will ensure every TCI component is input into the automated MMS by part number, serial number, lot number, date of manufacture and/or installation, and position installed. Items replaced will be deleted from the database after the NRTS action has been documented or XB3-coded TCIs replaced. When replacing components, ensure each new item is properly identified. This is especially important for CAD/PAD items and engine modules where replacement frequency or TMSM may vary for different part numbers or for designated -6 TO components for which historical documents are maintained.

7.2.3. Drogue chute TCIs, except chute harnesses, will be scheduled for replacement during drogue chute repack and before the expiration of the component service or shelf life. These components will not be overflowed.

7.2.4. When life-sustaining TCIs (identified with an asterisk in the -6 TO) or CAD/PAD items have been extended past their replacement dates by the applicable ALC single manager, a copy of the approving message will be maintained on file until the extended item is replaced. Identify the part and serial number as "EXTENDED" in CAMS. (Locally, use a similar means of identification for units using an automated MMS other than CAMS.) The extension period becomes the new due time.

7.2.5. TCIs tracked by date of installation (DOI) or date of manufacture (DOM) will only have the JST that comes due first loaded against the specific part or serial number. The OSS PS&D will create a JST for both the DOI and DOM for CAD/PAD and life-sustaining items listed in the applicable TOs. However, only the JST that comes due first will be tracked against the item. As a minimum, when the DOI and DOM frequencies are identical, maintain a JST for the DOM (not applicable for G081 units). The OSS PS&D will coordinate with egress, survival equipment, and life support on the management of these items.

7.2.6. CAD/PAD TCIs with less than 9 months of service life remaining may be turned into munitions (FK) supply and will not be reissued. TCIs with more than 9 months of service life will not be turned into FK supply by maintenance. Maintenance plans will reflect replacement dates to coincide with the 9-month parameter.

7.3. Forecasting, Preplanning, and Scheduling TCI Procedures. Items designated as TCIs will be replaced at specified intervals. The PS&D and EM will monitor and requisition TCI requirements based on projected equipment utilization. These requirements are considered due for replacement at the hourly postflight, phase, PE, or ISO inspection or HSC nearest to the replacement date. Accurate and timely forecasting to munitions supply is critical to ensure required TCIs are available prior to the forecast due date.

7.3.1. Forecasts will be performed using the procedures established in TO 00-20-9. The OSS PS&D will consolidate TCI forecasts and validate requirements for selected items listed in TOs 00-20-9, specific commodity TOs, and aircraft-specific -6 TO. As a minimum, the validation will include ensuring all items are accounted for and total numbers of needed items are correct. The consolidation and validation will be completed prior to forwarding the forecast to required agencies (including HQ AETC/LGMT).

7.3.2. The OSS PS&D will validate TCI requirements 45 to 60 days prior to the next calendar year quarter with the MASO. Validate current requirements against the annual forecast. Make corrections to the forecast based on aircraft utilization.

7.3.3. The PS&D will initiate three copies of AETC Form 523 (or a locally approved product) 60 days before the start of the required month of an aircraft scheduled inspection, reflecting the inspection start date for each aircraft. Use long-range plans as the basis for completing the AETC Form 523 and send a copy to the OSS PS&D, EM, and inspection dock, as applicable. (Copies may be e-mailed to the appropriate agencies.) Ensure TCIs are requisitioned to coincide with the aircraft inspection forecast date of the component due date.

7.3.4. Order non-CAD/PAD or engine items requiring time change up to 60 days (but not less than 30 days) before the required month. Order munitions items 45 to 60 days prior to the beginning of the month required. Forward only AF Forms 2005 to the munitions supply point. Include the forecast TCI date.

7.3.5. Units will use the SBSS module of CAMS to requisition TCIs. Follow the procedures in AFCSM 21-579, Volume 2.

7.3.6. The PS&D will verify the availability of the forecast TCIs with the MASO 30 days before the beginning of the month in which the required item is to be changed. Upon notification by supply that the part is available, schedule the TCI in the automated MMS and incorporate it in the weekly utilization and maintenance schedule.

7.3.7. When the TCI is complete, PS&D will review data entered by the performing work center and process the suspense validation in the automated MMS.

7.3.8. Semiannually, OSS PS&D (the OPR for AF Form 68, **Munitions Authorization Record**) will verify and update required information for the MASO.

Chapter 8

INSPECTION MANAGEMENT

8.1. Inspection Responsibilities. The PS&D function will identify, monitor, project, and schedule aircraft inspection requirements into maintenance plans. The EM function will identify, monitor, project, and schedule engine life limited component inspection requirements into maintenance plans. Solid long-range plans with accurate inspection forecasting limits aircraft down time and minimizes out-of-commission time.

8.2. Inspection Recording:

8.2.1. The OSS PS&D will load and monitor all aircraft scheduled and special inspection requirements within the automated MMS. A JST will be created for each scheduled and special inspection requirement listed in applicable TOs. The EM will load all engine inspection requirements listed in the aircraft TOs and applicable engine TOs into the JML. (AGE and armament schedulers will maintain their appropriate JML.)

8.2.2. The inspection function will coordinate with PS&D or EM to ensure changes to inspection workcards are updated in the JML. For special inspections accomplished on selected components and assemblies requiring entry on AFTO Form 95, work center supervisors will ensure the accuracy of automated MMS inputs prior to PS&D or EM processing of suspense validations.

8.3. Inspection Requirements. Because of the type, variety, and frequency of different types of scheduled and special inspections, each must be monitored, projected, and scheduled for accomplishment by PS&D or EM. The PS&D is the focal point for scheduled maintenance actions and is responsible for developing unit schedules that merge operational requirements and maintenance capabilities. Accurate schedules assist units in meeting utilization (UTE) rates and maintaining mission capable rates. Inspection requirements with a frequency greater than 30 days or 50 hours will be loaded by a JST into the automated MMS and included in all maintenance planning cycles.

8.4. Forecasting and Preplanning Scheduled Inspections. At least 30 days before the scheduled start month of an aircraft inspection and on a cycle equal to or greater than the HPO or HSC, PS&D will initiate an AF Form 2410, completing blocks 1 through 13 and 15 through 17. AETC Form 523 may be used as an aid in preparing the AF Form 2410 (paragraph 7.3.3.). The following sequence of events will be used to forecast and preplan scheduled inspections:

8.4.1. The PS&D will forward the AF Form 2410 to EM.

8.4.2. The EM will annotate all engine-related TCTOs, TCIs, inspections, or any major or minor maintenance actions required during the aircraft's scheduled downtime. After completion, the AF Form 2410 will be returned to PS&D.

8.4.3. The PS&D will review all known aircraft TCTOs, TCIs, special inspections, and delayed discrepancy data (planned or workable) and incorporate this data into the inspection work package. Known availability of parts and/or kits required to complete scheduled actions will be identified on the AF Form 2410.

8.5. Preinspection Meeting. (*NOTE:* Prior to the preinspection meeting, PS&D will accomplish an aircraft document review. Therefore, the meeting should be scheduled so aircraft AFTO 781-series forms can be made available for review during the meeting.) As a minimum, representatives from PS&D, inspection, and flight line functions as well as the egress function (when CAD/PAD TCIs or TCI verifications are scheduled) will attend the preinspection meeting. The supply function should also attend to verify part availability.

8.5.1. The PS&D will use the AF Form 2410 when conducting the preinspection meeting. Block 14 of the AF Form 2410 will list meeting attendees and discussion items presented. Block 15 will list additional specialist support requirements. In addition, each major action planned will be listed on the AF Form 2410.

8.5.2. The PS&D will inform the representatives in attendance of the inspection schedule, including TCTOs, TCIs, deferred discrepancies, special inspections, and dock flow days. Representatives will inform PS&D of any limiting factors that might affect the schedule. Supply will validate TCTO and TCI requirements for which backordered parts or kits exist.

8.5.3. After the meeting, PS&D will schedule all actions listed on the AF Form 2410 in the automated MMS. The original AF Form 2410 will be provided to the inspection function. The PS&D will maintain a duplicate AF Form 2410 in suspense to use as an aid when conducting the postinspection meeting.

8.6. Postinspection Meeting. The PS&D will chair the postinspection meeting and schedule the meeting with the same attendees as the preinspection meeting. The postinspection meeting will be held as soon as possible after completion of the inspection (including FCF release, if required) and prior to normal flight. Newly printed or transcribed AFTO 781-series forms will be used to accomplish the postinspection meeting.

8.6.1. Prior to the postinspection meeting, the inspection function manager will:

8.6.1.1. Ensure all discrepancies discovered during the look phase of the inspection were entered into the automated MMS in accordance with paragraph [3.18.2.](#) of this instruction.

8.6.1.2. Review the automated MMS to ensure corrected discrepancies and inspection card items are properly documented.

8.6.1.3. Ensure scheduled actions listed on the AF Form 2410 that have been completed are updated in the automated MMS.

8.6.1.4. Change the delivery destination for parts ordered, but not received during the inspection.

8.6.2. At the postinspection meeting, PS&D will review the work package for completeness and perform a DR. Attendees should be prepared to discuss any significant factors that had an affect on the inspection and could adversely impact future plans. This includes items listed on the AF Form 2410, but not completed. The PS&D and EM will review or process all suspenses and verify TCTO status, TCIs, and inspection due dates for accuracy. Errors will be corrected immediately. Historical records will be updated as required. After a complete validation of all records has been completed, PS&D will make the final entries on the AF Form 2410 and file the original with the work package in the aircraft jacket file. An AF Form 2410 of each scheduled inspection will be maintained for the complete inspection cycle.

Chapter 9

TIME COMPLIANCE TECHNICAL ORDERS (TCTO)

9.1. TCTO Program:

9.1.1. TCTOs are issued to provide activities with instructions for accomplishing a one-time change, modification, inspection, or installation of equipment. This includes applicable Federal Aviation Administration (FAA) air worthiness directives as well as original equipment manufacturer service bulletins and service instructions after concurrence by HQ AETC. TCTOs are issued from ALCs. HQ AETC and numbered Air Forces (NAF) may issue MAJCOM- or NAF-directed modifications and inspections for performing a one-time change, modification, or inspection.

9.1.2. Process MAJCOM and NAF (for weapons and armament systems only) one-time changes or modifications in the same manner as ALC TCTOs in the automated MMS with compliance periods, remove from service, and rescission dates as prescribed in Table 2-1 of TO 00-5-15, *Air Force Time Compliance Technical Order System*. MAJCOM, NAF, and local inspections are referred to as one-time inspections (OTI) (paragraph 9.7.). TCTOs are categorized as depot, organizational, or intermediate level; considered scheduled maintenance, except for immediate action; and integrated into maintenance planning cycles. The concurrent accomplishment of TCTO work with other scheduled or unscheduled maintenance should also be considered. When practical, all shelf and spare assets should be modified before in-use or installed items are modified.

9.2. Management of TCTOs:

9.2.1. The LG QA, in coordination with the OG QA, will review each incoming TCTO to determine its applicability to assigned equipment (paragraph 4.3.11.). AGE, munitions, and PMEL TCTOs will be reviewed by their respective functions. When compliance is required, LG QA will forward a copy to the appropriate maintenance function's PS&D for verification of individual equipment compliance status or any prerequisite TCTO requirements. The applicable PS&D (HQ AMC for G081 units) will input the TCTO in the automated MMS according to AFCSM 21-568, Volume 2.

9.2.2. The appropriate maintenance function's PS&D (EM, OSS, munitions, AGE, or PMEL) will administer and manage the TCTO program. This includes loading the TCTO into applicable automated tracking systems, presiding over the TCTO meeting, scheduling aerospace equipment and installed commodity TCTOs, and ordering kits or parts required by the TCTO. For aircraft TCTOs, the owning squadron's P&S function will schedule the TCTO for accomplishment.

9.2.3. The EM will schedule noninstalled engine-related TCTOs and coordinate with PS&D on installed-engine TCTOs, ensuring compliance prior to remove-from-service dates. The EM will use AETC Form 523 and annotate TCTO requirements on AF Form 2410 prior to the preinspection meeting (Chapter 8).

9.2.4. For TCTO actions on training equipment assigned to a flying training detachment (FTD) or mobile training team (MTT), the parent technical training center will manage and schedule all TCTOs.

9.2.5. If a condition or inspection TCTO generates a requirement for parts, the discrepancy will be entered in the automated MMS and AFTO Form 781A or applicable equipment record, and the

required parts will be ordered as normal wear out and replacement. Condition and inspection TCTOs are completed when the inspection is finished.

9.2.6. Many TCTOs require the modification of installed components. After this type of TCTO has been complied with, ensure modified components are not replaced with unmodified components. If supply issues an unmodified component, identify it as unmodified and return it to supply.

9.3. Responsibilities. Each maintenance function is responsible for the overall management of TCTOs applicable to the function's equipment. The function is also responsible for establishing plans to reflect TCTO accomplishment within prescribed time periods.

9.4. TCTO Processing and Procedures:

9.4.1. The LG QA TODO function will:

9.4.1.1. Coordinate with the appropriate QA for each incoming TCTO to determine applicability. (Munitions and TMDE functions will review their respective TCTOs.)

9.4.1.2. Date stamp each TCTO to reflect the date received. Interim TCTO start dates begin when the message arrives on base. Date stamping each TCTO with the date received indicates QA has reviewed the TCTO and it is applicable. Only date stamped TCTOs are authorized for use. E-mail or fax copies of TCTOs are not authorized for use unless they have been reviewed by the LG QA TODO function and date stamped.

9.4.1.3. Distribute TCTO copies to the appropriate maintenance function's PS&D and the OG QA, if applicable. Mark all copies except the original with "working copy" to avoid the requirement to maintain and control them as TOs according to TOs 00-5-1 and 00-5-2.

9.4.1.4. Ensure TCTOs are placed on appropriate address information group (AIG) or mail list distribution in order to receive interim TCTOs.

9.4.2. The LG QA will:

9.4.2.1. Report all deficiencies in technical instructions and kit-proofing, as determined by the performing flight or section, to the appropriate TCTO manager (TOs 00-5-1 and 00-5-15). Place particular emphasis on immediate action, urgent action, and routine safety TCTOs.

9.4.2.2. Draft, coordinate, and distribute local OTIs. (**NOTE:** Local OTIs for on-equipment maintenance may be drafted by the OG QA and sent to the LG QA for coordination and distribution.) OTI content and format is listed in paragraph [9.7.2](#).

9.4.2.3. Attend TCTO planning meetings.

9.4.2.4. Provide technical support to performing flights or sections.

9.4.3. The PS&D (OSS, EM, munitions, AGE, or PMEL, as appropriate) will:

9.4.3.1. On receipt of a TCTO from LG QA, determine the total number of end items that require modification or inspection. Distribute TCTO copies to performing and assisting flights or sections, and to supply inspection. Include a cover memorandum requesting the number of items in supply (including war reserve material) affected by the TCTO.

9.4.3.2. Chair a TCTO planning meeting with attendees from LG QA, OG QA, owning and performing flights and sections, and supply, if required. Ensure minutes of this meeting are recorded

on AF Form 2410 and provide an overall plan to implement the TCTO. Minutes will include TCTO applicability by ID number (or applicable part number or serial number for commodity TCTOs), purpose of the inspection or modification, scheduling parameters, remove from service date, review of the TCTOs procedures, and supply requirements identified before the TCTO can be scheduled for accomplishment. All attendees will sign the AF Form 2410 at the conclusion of the planning meeting to indicate their agreement with the conditions.

9.4.3.3. Establish a TCTO folder for each active TCTO. The folder will include the basic TCTO and supplements (as applicable); AF Form 2410 with meeting minutes; AF Form 2001 (if required); messages; supply cover memorandum from LG QA; and all other data related to the TCTO. Maintain this folder until the TCTO is published in the applicable TO index; then dispose of it according to AFI 37-139. (**NOTE:** For aircraft TCTOs, the OSS PS&D will maintain the master TCTO folder.) As a minimum, maintain the TCTO in the automated MMS until the applicable rescission.

9.4.3.4. Load the TCTO into the automated MMS (HQ AMC for G081 units). Add an 802 action for OG QA when a TCTO affects W&B. Use the SBSS module of CAMS to order kits or parts required. (See procedures in AFCSM 21-568, volume 2, and AFCSM 21-579, volume 2.) When SBSS interface is not available, initiate three copies of AF Form 2001. Forward two copies of the form with a copy of the TCTO to the supply TCTO monitor. For locally obtained parts, prepare an AF Form 2001, listing each item by stock number, noun, and quantity required. Assign ID numbers to kits as they are received, using AETC Form 523 (or a locally approved product) as a guide if the compliance period warrants. **NOTE:** As a minimum, load TCTO supplements that require additional work, change existing maintenance procedures, or place additional demands on supply.

9.4.3.5. Attend monthly supply TCTO reconciliation meetings (AFMAN 23-110, Volume 2). Using the TCTO reconciliation listing from supply, discuss the number of kits on hand, any mark-for changes, and estimated kit delivery dates compared with the time to accomplish parameters and measured against TCTO remove from service dates. Keep a minimum of six TCTO reconciliation listings and meeting minutes.

9.4.3.6. Validate TCTO status codes in automated MMSs for tracking and scheduling purposes. The owning PS&D will assign EIDs in the automated MMS when TCTOs are scheduled. Schedule all workable TCTOs for accomplishment prior to permanent equipment transfer or storage input.

9.4.3.7. Review suspense validation inputs prior to processing the TCTO suspense and updating automated historical records. Ensure proper documentation of TCTO accomplishment and accessory time changes according to the 00-20 TOs and AFSCM 21-568.

9.4.3.8. Send a DIREP, by message, when local managers anticipate a problem with active TCTO compliance within prescribed time limits. Send messages to HQ AETC/LGMA (or HQ AETC/LGMW for weapons and munitions). Reports should include:

- 9.4.3.8.1. TCTO number and narrative.
- 9.4.3.8.2. Total units affected.
- 9.4.3.8.3. Total units complete.
- 9.4.3.8.4. Kits on hand.

9.4.3.8.5. Kits on order, estimated delivery date, and requisition number.

9.4.3.8.6. Narrative of the problem hindering TCTO accomplishment prior to current rescission date.

9.4.4. The supply TCTO kit monitor will:

9.4.4.1. Contact the research element to load an item record for the TCTO upon receipt of TCTO requirements from maintenance.

9.4.4.2. Annotate the TCTO cover memorandum, received from the PS&D, with the number of assets in supply (including WRM) that are affected by a TCTO. **NOTE:** For aircraft supported by COMBS, TCTO kits are stored in the COMBS until they are ready to be installed. Return the memorandum to the PS&D.

9.4.4.3. Forward dueout documents produced by SBSS to the maintenance function PS&D for filing into the TCTO file.

9.4.4.4. Provide notification to the PS&Ds when locally procured parts or base-assembled kits are complete. SBSS will send CAMS a dueout status notification indicating availability.

9.4.4.5. Take action to correct discrepancies identified on the TCTO reconciliation listing; for example, mark-for changes, kit shortages or excesses, and delivery dates past the TCTO remove from service date.

9.4.4.6. Advise PS&Ds on the status of incomplete kits.

9.4.4.7. Seal and store partially completed TCTO kits or parts in the tail number bin (TNB) and mark the container or package with the tail number, serial number, or equipment ID number and TCTO number.

9.4.5. The performing flight or section will:

9.4.5.1. Validate technical instructions and data on AFTO Form 82, **Certificate-Proofing TCTOs/Kits**, when performing TCTO kit-proofing (TO 00-5-15).

9.4.5.2. Report all deficiencies in technical instructions and application to the applicable PS&D and LG QA.

9.4.5.3. Inventory TCTO kits for completeness prior to starting work. If a discrepancy exists, contact the appropriate PS&D to resolve shortages.

9.4.5.4. Perform the inspection or modification procedures outlined in the TCTO and document the results or findings in the automated MMS or the appropriate manual system. The accuracy of the documentation is the responsibility of flight or section supervision. If a TCTO calls for inspection only and a discrepancy is discovered that requires parts, complete the EID for the TCTO and load a separate EID against the equipment. Defer the EID to the AFTO Form 781K.

9.4.5.5. Attend TCTO planning meetings. Thoroughly review the TCTO prior to the meeting. Bring clarification of any requirements to the attention of LG QA and appropriate PS&D during the meeting.

9.4.5.6. Perform a supervisory inspection of initial TCTO compliance on TCTOs determined to need initial evaluation. Perform initial evaluations based on the complexity of the TCTO as well as the criticality of the system or component modified.

9.4.5.7. Requisition parts required after the inspection portion of a TCTO that states "inspect and replace if found defective" if the part is not required to start the TCTO.

9.5. Interim TCTO Status Reporting. HQ AETC/LGM may direct daily or weekly manual status reporting on immediate, urgent, or routine action safety TCTOs, as required.

9.6. Control and Transfer of TCTO Kits. When transferring equipment with open nonworkable TCTOs, transfer the applicable TCTO kit with the weapon system or equipment. (See detailed guidance for the transfer of TCTO kits in AFMAN 23-110, Volume 2.) Transfer of J85 and J69 engines normally include transfer or exchange of TCTO kits. Engine kit requirements and excesses will be reconciled and inventories periodically adjusted by HQ AETC/LGMTP.

9.7. MAJCOM, NAF, and Local OTI Procedures:

9.7.1. The MAJCOM, NAF, or local OTIs will be processed and managed with the same procedures as a TCTO issued from ALC. OTIs will be initiated by the MAJCOM, the NAF, or the OG or LG commander. OTI requirements may be repeated over a period of time until a malfunction is resolved.

9.7.2. OTIs will be issued with a data code consisting of a unique alpha prefix ("J" for AETC, "N" for 19 AF, "L" for local OG or LG) and a six-character sequence number. For local OTIs, the six remaining characters identify the originating wing, year issued, and sequence number. (For example, L097601 is the first 97AMW OTI of 1996.) For AETC and 19 AF OTIs, the six remaining characters identify the year, month of issue, and sequence number. (For example, J612010 or N612010 is the 10th AETC or NAF OTI issued during December 1996.) The data code is used to report and control OTI compliance in accordance with AFCSM 21-568, Volume 2. **NOTE:** For units that operate under G081, the first two characters in the data code are automatically created by the automated system.

9.8. OTI Distribution. AETC and NAF OTIs will be sent by message to applicable organizations. Local OTIs will be provided through the LG QA. **NOTE:** Field units will send a copy of local OTIs to AETC and NAF.

9.9. OTI Contents. Minimum OTI contents include the following information:

9.9.1. Date OTI was issued.

9.9.2. Data code (according to instructions in paragraph 9.7.2.).

9.9.3. Remove-from-service date.

9.9.4. Rescission date.

9.9.5. Type or category (immediate, urgent, or routine action).

9.9.6. Background, purpose, or reason.

9.9.7. Application.

9.9.8. Compliance period.

9.9.9. By whom work is to be accomplished (personnel and man-hours required).

9.9.10. Parts or tools required. (List part and stock numbers with a noun and quantity per application.)

- 9.9.11. How work is to be accomplished. (Give detailed and specific step-by-step instructions.)
- 9.9.12. Operational checks. (If required to verify operational status, list TO references.)
- 9.9.13. Record actions.
- 9.9.14. Compliance reporting. (AETC or NAF may require daily or weekly status.)
- 9.9.15. OPR (OTIs drafter's name and telephone number).

9.10. TCTO Kit Waivers. HQ AETC/LGM is the sole waiving authority for TCTO kits. In coordination with HQ AETC/LGSWA and LGMA, ensure all required assets are available in the supply system prior to submitting a waiver request to HQ AETC/LGM. Ensure waiver requests meet the requirements established in TO 00-5-15.

Chapter 10

DEFERRED DISCREPANCY MANAGEMENT

10.1. Deferred Discrepancies. A deferred discrepancy is a minor discrepancy on an aircraft or item of equipment that cannot be corrected within 3 duty days. This includes nonlife-sustaining TCIs that are passed their due date and overdue -6 inspections to include washes. Deferred discrepancies are separated into three distinct categories; awaiting maintenance (AWM), awaiting parts (AWP), and awaiting depot (AWD), as follows:

10.1.1. AWM discrepancies are deferred discrepancies awaiting funds, manpower, facilities, or equipment. AWM deferred discrepancies recorded against an aircraft or AGE will be scheduled and corrected as soon as possible, but no later than the next PE, ISO, or phase inspection, unless an extension is approved by the contracting officer (for contract maintenance units) or SMO (for military or civil service maintenance units).

10.1.2. AWP discrepancies are discrepancies deferred due to nonavailability of assets. AWP discrepancies must have a valid dueout established.

10.1.3. AWD discrepancies are beyond unit capability and are deferred awaiting depot input. Develop an AWD work center code in the automated MMS so AWD discrepancies are separated from AWM and AWP writeups and not counted in AWM and AWP rates.

10.2. Maintaining Automated AWM Discrepancies. The owning flight or section will ensure all deferred discrepancies are input in the automated MMS and updated, completed, or scheduled through PS&D. If scheduled maintenance actions are not completed prior to the next scheduled flight or by the end of the 24-hour forecast period, the owning flight or section will reschedule the event. During aircraft DRs, the owning flight or section will resolve any differences between the aircraft forms and the deferred listings.

10.3. Maintaining Automated AWP Discrepancies. The performing flight or section will:

10.3.1. Use its shop code to ensure a demand is made on supply for all assets needed to complete AWP deferred discrepancies and ensure discrepancy data is input in the automated MMS.

10.3.2. Ensure the supply data is loaded into the automated MMS by the maintenance supply liaison (MSL), FAST, or authorized maintenance function.

10.3.3. Ensure assets ordered have the same EID as the original maintenance discrepancy.

Chapter 11

AIRCRAFT AND EQUIPMENT FORMS DOCUMENTATION AND AIRCRAFT DOCUMENT REVIEWS (DR)

11.1. Aircraft and Equipment Forms Documentation. Aircraft forms documentation will be accomplished according to 00-20 TOs and Air Force and command instructions.

11.1.1. When the automated MMS is available, automated forms will be used. As a minimum, AFTO Forms 781A, 781J, 781K, 244, and 95, are generated by the automated MMS CAMS (G081). If the automated MMS is not available, use the electronic AFTO forms available on the Air Force forms web site. **No locally developed forms are authorized.**

11.1.2. The work center supervisor and section chief will ensure discrepancies, completed maintenance actions, inspections, serially controlled components, TCTOs, deferred discrepancies, etc., are documented and input into the automated MMS as soon as possible, but no later than the end of the current duty shift. In instances where the automated MMS is not operational, develop procedures to manually document maintenance actions and ensure the appropriate automated MMS documentation is updated as soon as the system is operational. Specifically, ensure the automated MMS will be consistent with and/or match the aircraft AFTO 781-series forms.

11.1.3. Document support general data with 02 (wash only), 03 (scheduled inspections or maintenance), 04 (special inspections), and 09 (shop support general) prefixed work unit codes. All other support general data is not required to be input into the automated MMS (TO 00-20-2).

11.1.4. All Red-X discrepancies will be cleared from both the aircraft forms and the automated MMS prior to flight. Units will develop local procedures to ensure Red-X discrepancies discovered during "Red Ball" maintenance are input and cleared from the AFTO Forms 781 and the automated MMS prior to flight. In instances where the automated MMS is not operational, develop procedures to ensure the appropriate documentation is completed as soon as the system is operational.

11.1.5. Preprinted manual aircraft forms are not authorized for use in units with an available automated MMS. Units may create job flow packages in the automated MMS to automate required documentation of repetitive complex tasks, such as engine change, phase inspection, flight control maintenance, etc. Job flow packages or preprinted manual aircraft forms (when authorized) will be reviewed each time the governing publication changes or at least annually.

11.1.6. As a minimum, any Red-X symbol condition generated during the performance of an inspection (phase, ISO, PE, HSC, or HPO) will be entered into the automated MMS. Minor discrepancies may be tracked on AFTO Forms 349 or locally approved listings. Any minor discrepancy still open when the "fix" phase is complete must be entered into the AFTO Form 781A or K and the automated MMS.

11.1.7. Aircraft modified for service tests will have a 3- by 5-inch red-bordered placard affixed to the front side of the AFTO Form 781F, **Aerospace Vehicle Flight Report and Maintenance Document**. The placard will state the type of modification and installed equipment.

11.1.8. Documentation prescribed in this instruction will be maintained according to AFMAN 37-123 and disposed of according to AFMAN 37-139.

11.1.8.1. Units using fully automated forms will maintain the last seven copies of the aircraft forms in the aircraft jacket file in PS&D. When the eighth report is received, destroy the earliest record.

11.1.8.2. Units without an automated MMS authorized to use manual aircraft forms will maintain the last 3 months' and current month's worth of closed aircraft forms in the aircraft jacket file.

11.1.9. Locally developed databases will not be used in lieu of the approved automated MMS.

11.2. Aircraft Document Reviews (DR). A DR is a scheduled maintenance action. It will be published in the weekly maintenance and utilization schedule and counts in scheduling effectiveness computations.

11.2.1. Aircraft AFTO 781-series forms for possessed aircraft will be reviewed by flight line maintenance functions (crew chief or alternate), PS&D, EM, and supply to ensure the accuracy and validity of entries.

11.2.2. As a minimum, this review will validate and correct any errors on airframe and engine-operating times and cycles, TCTO documentation, TCI component operating times, time remaining to the next inspection, backordered supply document numbers, and a validation of open and deferred discrepancies.

11.2.3. A DR will be accomplished at least every 60 days for units using fully automated AFTO 781-series forms. Units without access to the approved automated MMS and authorized to use manual (or those using partially automated) AFTO 781-series forms must accomplish a DR at least every 30 days. A DR must also be accomplished in the following cases: when an aircraft is transferred (including Queen Bee), when an aircraft is deployed for more than 30 days, before and after storage, after fatigue tests, and before and after scheduled PE, phase, ISO, and HPO inspections. (H-1 aircraft will not perform a DR that coincides with the HPO.) **NOTE:** For cannibalization aircraft, a DR will be conducted at least every 30 days regardless of the AFTO 781-series forms used. Group commanders may shorten the DR interval as needed.

11.2.4. DR procedures are as follows:

11.2.4.1. The PS&D will create a JST for DRs and load this inspection against all assigned aircraft. **NOTE:** JST intervals are based on the type of AFTO 781-series forms used--automated or manual.

11.2.4.2. The PS&D will schedule the DR into maintenance plans.

11.2.4.3. The PS&D and EM will validate applicable inspection, TCI, and TCTO data for correct due dates or expiration dates, airframe and engine operating times (or flight times as applicable), and appropriate symbol entry required by TO 00-20-1.

11.2.4.4. Supply will run a tail number inquiry to validate backorders and correct any discrepancies discovered.

11.2.4.5. All documentation discrepancies discovered during the DR will be corrected by maintenance personnel prior to clearing the job in the aircraft forms and automated MMS.

Chapter 12

TECHNICAL ORDERS (TO)

12.1. TO Management. AFPD 21-3, *Technical Orders*, establishes the Air Force TO system and policy regarding the use of TOs. These requirements are further expanded in TOs 00-5-1, 00-5-2, and 00-5-15, *Air Force Time Compliance Technical Order System*. Activities performing specialized maintenance, such as PMEL, may establish their own TODOs when authorized by the group commander. TCTOs are loaded in the Automated Technical Order Management System.

12.2. Central TO File. As a minimum, contract maintenance quality control (QC) or LG QA will keep a central file of general and procedural type TOs and a copy of TCTOs, inspection workcards, and maintenance checklists pertaining to equipment owned, operated, or maintained by the unit. Based on the TO requirements processed, QC or LG QA will establish TO series initial distribution requirements for the central file to ensure receipt of all applicable TCTOs. The number of TOs required for dispersal, as well as their use, deployment, and control, is governed by the unit dispersal and operational plan. **NOTE:** QC or LG QA need not file infrequently used specialized TOs such as overhaul TOs. These TOs may be maintained by the primary maintenance function.

12.3. Commercial Publication Files. When TOs have not been published for equipment assigned to the maintenance complex, the QC, LG QA, or maintenance function where the maintenance is actually done may set up a file of commercial publications relating to this equipment (AFPD 21-3 and TO 00-5-2). This file must be collocated with the TO file.

12.4. TCTOs Affecting the TO File. Modifications (such as flight, maintenance, illustrated parts breakdown, and inspection requirements manuals) frequently drive changes to TOs. QC or LG QA will ensure replaced and changed pages are kept in the central TO file until the TCTO is completed and changes are made to the TO.

12.5. Local Workcards, Checklists, and Checksheets. Local workcards or checklists will be developed and filed as authorized by TO 00-5-1. All locally developed workcards and checksheets must be reviewed and validated by QC or LG QA and approved by the applicable group commander or functional director (or commander and QAE). All local workcards, checklists, and checksheets will be revalidated annually. **NOTE:** Checksheets differ from checklists because checksheets contain no technical instructions.

12.6. Change and Revision Management. The LG QA TODO function will prepare a list of all supplements, changes, and/or revisions to TOs. This list will include the TO number, date, and date of receipt. The list will be forwarded to PS&D for publication as part of the weekly maintenance plan. Supervisors will review this list to help ensure TOs are current and supplements, changes, and/or revisions are properly posted.

12.7. TO Utilization. The use of a chit system as an alternate TO signout method is authorized at the option of the applicable group commander.

12.8. Digital TOs. Digital TOs are becoming more and more prevalent. They will soon be available for some of our aircraft and systems, and these TOs will be the primary source of data in the future. When digital TOs are available, they will be used to the maximum extent possible.

Chapter 13

VERIFICATION PROCEDURES FOR CARTRIDGE ACTUATING DEVICES/PROPELLANT ACTUATING DEVICES (CAD/PAD)

13.1. Overview. CAD/PAD verification and validation will ensure the data recorded in the automated MMS corresponds with the items installed on the ejection seat, canopy, and aircraft.

13.2. Application. As a minimum, CAD/PAD components and harnesses installed on non-Advanced Concept Ejection System II (ACES II) will be validated during major PEs. ACES II CAD/PAD components will be validated during the 36-month seat inspection. Verification of ACES II and non ACES II CAD/PAD installed components will be limited to visually accessible items. Drogue chute verifications will be done during chute repacks by the survival equipment function.

13.3. Responsibilities. In the automated MMS, egress will correct any discrepancies discovered during the verification procedures outlined in paragraph 13.4. Egress will request a current updated automated MMS egress-only PRA from the database manager and provide PS&D a signed, verified, and updated copy of the PRA. **NOTE:** Egress sections using CAMS may utilize screen #257, Egress Configuration Listing, in place of the PRA.

13.4. Procedures. Egress personnel will reconcile the data listed on their CAD/PAD verification sheet (extracted from the installed components) with the data listed on the existing PRA filed in the work center file. The minimum data requiring verification are the components part or serial number, lot number, position installed, date of manufacture, date of installation, date of expiration, and time change frequency listed in applicable 11A- or 11P-series TOs.

13.4.1. If the data matches (that is, no errors or omissions are noted), egress will request a current updated automated MMS egress-only PRA from the database manager to ensure the accuracy of CAD/PAD components and harnesses recorded in the automated MMS. The egress technician or supervisor performing the verification will sign all copies of the current PRA and forward one copy to PS&D to file in the aircraft jacket file. The original will be filed in the egress work center for subsequent verifications.

13.4.2. If errors or omissions are noted before the aircraft's next scheduled sortie, the egress technician or supervisor performing the verification will update the automated MMS to match what is actually installed. Annotate the correct data in red on the existing PRA and place the PRA in a suspense file. Request a current updated automated MMS egress-only PRA, ensure the corrections have been made to the automated MMS, sign all copies, forward a copy to PS&D, and dispose of the suspense copy. Retain the original in the egress work center for subsequent verification. **NOTE:** The focus of the CAD/PAD verification is to ensure the automated MMS is always correct.

13.4.3. PS&D will review the corrected PRA for any TCI due dates that may change because the database is incorrect. Current TCI forecasts will be for accuracy and an adjusted forecast submitted as required. PS&D will file the signed PRA in the aircraft historical record file.

13.4.4. When egress components are replaced between major PEs, egress will update the existing PRA, (in red) with the new information. Request a current updated automated MMS egress only PRA.

Ensure the updates have been made to the database, sign all copies, forward a copy to PS&D, and dispose of the suspense copy. Retained original in the egress work center for subsequent verification.

13.4.5. An optional method of maintaining CAD/PAD verifications is to provide P&S and egress a shared drive where read-only, password-protected PRAs are posted.

Chapter 14

MISHAP AND INCIDENT REPORTING PROCEDURES

NOTE: Reports in this chapter are exempt from the reports control symbol requirements per AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Inter-agency Air Force Information Collections*.

14.1. Responsibilities for Mishap and Incident Reporting. The OG and LG commanders will designate a POC within their respective QA to serve as the maintenance activity POC for mishap and incident reporting. (The group commander may elect to designate the entire QA office as the POC.) The OG and LG may elect to combine resources and appoint one individual or office as the maintenance activity POC. Notify HQ AETC/LGMTP in writing identifying the unit's foreign object damage (FOD) prevention program POC. The POC will:

14.1.1. Receive training from wing safety on mishap reporting procedures and requirements.

14.1.2. Coordinate impoundment actions for mishaps and incidents per AFI 91-204, *Safety Investigations and Reports*, and local directives. (See paragraph 1.8.7. of this instruction.)

14.1.3. Assist wing safety in mishap investigations.

14.1.4. Ensure coordination between the appropriate group commander and wing safety on mishap reports affecting aircraft or maintenance. If the commander concurs with wing safety's recommended maintenance actions in the mishap or incident report, the actions will be initiated after wing safety transmits the final mishap report. **NOTE:** If maintenance does not concur with wing safety recommendations, the group commander will submit justification for nonconcurrency to HQ AETC/LGM within 5 workdays and send an information copy to HQ AETC/SEF or SEG, as applicable.

14.2. Miscellaneous Reporting Instructions. The group commander (or representative) will initiate formal reporting to HQ AETC/LGM according to AFI 91-204 for any incident, mishap, failure of an engine rotating component (turbine or compressor components), explosive or missile mishap, dropped object, FOD, or unusual occurrence that results in damage to aircraft, aircraft components, AGE, and maintenance facilities and/or injury to personnel. For a mishap, incident, or unusual occurrence during normal duty hours, the MA (for contract activities) or SMO will notify the appropriate HQ AETC/LGMA airframe section by telephone within 3 hours. (If the event is engine-related, contact HQ AETC/LGMTP.) After duty hours, the MA or SMO will telephone the appropriate HQ AETC/LGM section at the start of the next duty day. Report specific mishaps to the designated office as follows: **NOTE:** Even if formal reporting is not required, any aircraft- or maintenance-related unusual occurrences or significant events should be reported to the appropriate HQ AETC/LGM section.

14.2.1. Report FOD (including engines) to HQ AETC/LGMTP.

14.2.2. Report dropped objects to HQ AETC/LGMA. Include item description and panel number (if applicable), last maintenance action completed, aircraft MDS, and tail number.

14.3. FOD Prevention Program:

14.3.1. Overview. The vice wing commander or designated representative is responsible for ensuring an effective FOD prevention program is established. All maintenance, operations, and base support

squadrons whose personnel perform duties on or in the area of the flight line must comply with FOD prevention as outlined in this instruction. This paragraph establishes minimum requirements for an effective and meaningful FOD prevention program.

14.3.2. Definition. FOD is any damage to an aircraft engine, aircraft system, or tire caused by an external foreign object (FO) that may or may not degrade the required safety and/or operational characteristic of the engine, aircraft system, or tire.

14.3.3. Specific FOD Prevention Requirements:

14.3.3.1. While maintenance is being performed on aircraft, uninstalled engines, and AGE, openings, ports, lines, hoses, electrical connections, and ducts will be properly plugged or capped to prevent FOs from entering these systems.

14.3.3.2. Items (for example, aircraft forms binders, video tape recorder tapes, checklists) will *not* be placed in or on engine intakes.

14.3.3.3. Install intake plugs, FOD strips, or tape and barrier paper (as required by technical data) prior to performing maintenance in or around engine intakes. Ensure engine inlet runup screens and antipersonnel guards are used as required by applicable weapon system TOs.

14.3.3.4. Prior to engine start or after engine shutdown on maintenance or test cell runs and after any engine intake maintenance, each affected engine intake and exhaust will receive a FOD inspection. (This is not required on engine shutdowns for "Red Ball" maintenance.) The FOD inspection will be documented with a Red-X symbol in the applicable form (AFTO Form 781A, AFTO Form 349, or test cell worksheet). Engine, aircraft, and seat pitot tube covers will remain installed on aircraft as close to crew show as possible, based on MDS and local conditions.

14.3.3.5. Use a light source of sufficient illumination to inspect the aircraft intakes and exhaust for FO or damage. In addition, wear a pocketless, zipperless, buttonless "bunny-suit" whenever physical entry into an aircraft intake or exhaust is required. Suits are not required to be worn on large multiengine aircraft during engine inlet or exhaust inspections if personnel do not physically enter these areas. When performing intake inspections while wearing a chemical ensemble, ensure all pockets are emptied and accessories removed. Use x-ray, borescope, and other state-of-the-art equipment to locate an FO in an inaccessible area.

14.3.3.6. Flashlights with clips must have the clips removed prior to use on or around aircraft, uninstalled engines, and AGE.

14.3.3.7. Maintenance production areas will have approved FO containers readily accessible to workers. Vehicles normally driven on the flight line will be equipped with secured and lidded FO containers.

14.3.3.8. Work order residues used on or around aircraft, uninstalled engines, and AGE will be controlled.

14.3.3.9. When an item is lost or suspected lost within the immediate vicinity in or around an aircraft, the aircraft will be immediately grounded by placing a Red-X symbol in AFTO Form 781A and lost tool checklist procedures will be initiated according to this instruction.

14.3.3.10. Rag control applies to organizations and personnel performing on-equipment aircraft maintenance and jet engine maintenance and to other areas designated by group commanders.

14.3.3.11. Personnel will remove the AF Form 1199, **USAF Restricted Area Badge**, when performing intake or exhaust inspections if they physically enter these areas. Restricted area badges will be secured to the uniform with a subdued nylon or cotton cord. To prevent the loss of an attached metal clip, pass the cord through the clip eyelet. (The restraining cord is optional for aircrew members only.) A plastic armband may be used in place of the nylon or cotton cord. Metal insignias or badges will not be worn with the battle dress uniform (BDU) or outerwear on the flight line or in aircraft maintenance areas. Escorts of visiting personnel will ensure FOD prevention measures are taken.

14.3.3.12. FOD "walks" are mandatory to remove FOs from ramps, runways, and access roads. In addition, using vacuum or magnetic sweepers or sweeping by hand is highly encouraged to supplement FOD walks. Periodic inspections of parking spots, taxiways, engine runup areas, and aircraft hangars will be conducted for pavement condition and potential FOD items and sources.

14.3.3.13. Each base will develop a local policy governing the wear of hats on the flight line. Climate and safety will be considered. Hats will not be worn within the danger area of an operating jet engine as defined in the applicable aircraft-specific TO. While performing official duties, security forces may wear the beret with insignia attached. However, when they are within 50 feet of an operating aircraft, their berets must be removed and secured. Wigs, hairpieces, metal hair fasteners, and earrings are not authorized on the flight line.

14.3.3.14. When FOD is discovered on a transient aircraft, depot input, or Queen Bee engine, the host FOD monitor or aircrew will immediately notify the owning organization. An informational copy of the FOD report will be provided to the owning organization's safety office to ensure compliance with AFI 91-204. Prior to engine start, aircrews will ensure proper documentation in the AFTO Form 781A has been completed. If an intake inspection cannot be performed, an entry should be made in the AFTO Form 781A stating, "No intake inspection was completed prior to engine start." Entry will be entered on a Red Dash.

14.3.3.15. Personal tools (for example, mini-mag flashlights, leathermans, buck knives) are not authorized on the flight line or in any maintenance area.

14.3.3.16. Pilots and aircrew members must account for all equipment and personnel items after each flight and ensure any items that become lost during flight are documented in the aircraft AFTO Form 781A.

14.3.3.17. Prior to flight, local FOD prevention programs will address the elimination of FOs in aircraft cockpits and flight decks.

14.3.3.18. AFI 91-204 FOD data will be analyzed to identify areas that need additional management emphasis.

14.4. FOD Prevention Responsibilities:

14.4.1. Vice Commander. The vice commander or designated representative will be assigned as the FOD prevention program manager. He or she will appoint a FOD monitor to ensure an effective FOD prevention program is enforced by all personnel having access to the flight line and maintenance areas. To effectively manage the program, the wing vice commander or designated representative will:

14.4.1.1. Ensure unit commanders, maintenance officers, superintendents, and supervisors give full support to the FOD prevention program.

14.4.1.2. Provide local guidance to ensure each FOD mishap is investigated and action taken to solve any underlying problems.

14.4.1.3. Review all unit FOD mishap reports.

14.4.1.4. Coordinate FO prevention needs with the airfield manager and other agencies when construction is in progress on or near the flight line. Also coordinate with personnel in other areas where FOD incidents could occur.

14.4.1.5. Ensure FOD prevention is part of QA inspections.

14.4.1.6. Appoint a qualified TSgt or above (or civilian equivalent) with at least 8 years of experience in the maintenance field to the position of FOD monitor and post his or her name in a prominent place within the unit on a locally approved visual aid.

14.4.2. FOD Monitor. The location of the FOD prevention office is at the discretion of the wing vice commander, but it is normally located within QA. At a minimum, the wing FOD monitor will:

14.4.2.1. Inform wing agencies of FOD hazards.

14.4.2.2. Develop procedures to document and perform spot checks of selected wing areas each week.

14.4.2.3. Be involved in each FOD investigation and help ensure corrective actions are sound.

14.4.2.4. Develop a unit training and prevention program. In conjunction with work center supervisors, review work center FOD training, awareness, and prevention programs. FOD prevention programs must be tailored to fit the needs of each individual organization. Those units with several types of assigned aircraft will have their own FOD prevention training incorporated into the wing training program. The content of the program will be based on the employment of the specific type of aircraft and support equipment and any specific production or operational environments. An initial FOD awareness and responsibilities briefing will be given to all newly assigned personnel.

14.4.2.5. Ensure evaluated or repaired FOD is documented as a significant action in the AFTO Form 95 (TO 00-205).

14.4.2.6. Periodically inspect and report damaged pavement, flight line construction, and other hazards in or near aircraft parking ramps or taxiways to the airfield manager. Monitor the status to ensure timely repairs.

14.4.2.7. At least quarterly, conduct briefings to operations and support commanders and work centers on FOD report findings and crosstells. Forward a copy of the minutes to HQ AETC/LGMTP.

14.5. FOD Investigating and Reporting:

14.5.1. When suspected or confirmed FOD and/or lost tool incidents are discovered, the MOC will be immediately notified. The MOC will notify QA. Aircraft sustaining FOD damage from an unknown cause will be automatically impounded. Nicked blades that are blendable and within TO limits are not required to be impounded.

14.5.2. FOD incidents are classified as preventable and nonpreventable. Only preventable FOD over \$5K (parts and labor) will be chargeable. FODs are considered preventable except FODs that are:

14.5.2.1. Caused by natural environment or wildlife. This includes hail, ice, stone, animals, insects, and birds. Report this type of damage according to AFI 91-204. Do not include it in FOD rates.

14.5.2.2. From internal engine materiel failure (as long as damage is confined to that engine).

14.5.2.3. Caused by materiel failure of an aircraft component if the component failure is reported as a DR using the combined mishap DR reporting procedures of AFI 91-204 and TO 00-35D-54.

14.5.2.4. Found during depot overhaul for maximum operating time.

14.5.3. Engine damage caused by improper anti-ice/de-ice procedures by either flight or ground crews are considered preventable.

14.5.4. Engine damage caused by gunnery or rocket mission ricochets is considered nonpreventable if mission parameters were not exceeded and range cleaning was sufficient.

14.5.5. Helicopter engine damage caused by rocks, stones, wood, or other objects ingested during low hover operations are considered nonpreventable, if mission parameters were not exceeded.

14.5.6. Preventable FOD incurred at test cell or on trim pad will be chargeable against the unit's rate.

14.5.7. HQ AETC LGMTP will resolve any FODs that are questionable; that is, preventable or non-preventable.

14.5.8. The wing FOD monitor will report preventable FOD incidents to HQ AETC/LGMTP by telephone, fax, or e-mail as soon as the damage is known, but no later than 24 hours after occurrence.

14.5.9. AETC Form 199, **Foreign Object (FOD) Incident Investigation**, will be used to provide FOD data and information in a timely manner (no later than 60 days after the incident) to HQ AETC LGMTP for inclusion in quarterly reports and dissemination to other units. The formula is as follows: the number of FOD incidents divided by aircraft flying hours multiplied 10,000 = FOD standard.

14.5.10. FOD rates are computed by MDS as follows: the number of preventable FODs (damage exceeding \$5,000) divided by aircraft flying hours multiplied by 10,000 = FOD rate.

14.6. FOD Prevention Committee Meeting. Wing FOD prevention committee meetings will ensure the FOD prevention program is sound and meeting unit needs. Meetings will be conducted monthly when the unit exceeds the established standard; quarterly if the unit FOD rate is less than the established standard.

14.7. Dropped Object Prevention (DOP) Program:

14.7.1. Overview. A dropped object is any item (excluding inadvertently released munitions) that falls from an aircraft from engine startup to shutdown when not directed by the aircrew. Inadvertently released munitions or munitions released in excess of the quantity selected by the aircrew are not considered dropped objects and will be reported according to AFI 91-204. Any object dislodged by an FO (for example, an in-flight refueling [IFR] boom or a bird) is not considered a dropped object. A preventable dropped object is defined as any item lost due to negligence during inspection or improper installation.

14.7.2. DOP Responsibilities. All units that fly, service, or maintain aircraft will develop a DOP program with the following provisions and responsibilities:

14.7.2.1. Field Inquiries. DOP monitors or aircraft functional managers will act as OPR for all dropped object field inquiries. The group commander responsible for flight line maintenance will serve as the DOP program manager and will appoint the wing DOP monitor. The wing DOP monitor may be assigned to QA.

14.7.2.2. Training. The wing DOP monitor will identify and develop training standards. Commanders will ensure all maintenance personnel involved in on-equipment maintenance receive adequate DOP training.

14.7.2.3. Prevention. Effective prevention of dropped objects must begin when an aircraft door, panel, or cowling is opened for maintenance and during munitions buildup, loading, and arming. Maintenance personnel will ensure the serviceability of fasteners and proper fit of doors, panels, connectors, etc. They will place special attention on the correct length of fasteners and condition of nut plates and other securing devices. Supervisors will place special emphasis on these areas during their inspection of completed maintenance actions.

14.7.2.4. Investigation. The DOP monitor will investigate each dropped object incident, making every effort to determine the precise cause and ensure positive corrective action is accomplished. Any time a material or design deficiency is the cause (or suspected cause), a deficiency report will be submitted in accordance with TO 00-35D-54 (even when an exhibit is not available). Investigation results will be distributed to each appropriate work center for inclusion in personnel training and education programs.

14.7.2.5. Reporting. The DOP monitor will prepare a monthly summary of reported dropped objects and submit this summary (preferably by e-mail or message) to HQ AETC LGMA by the fifth duty day of the next month. (**NOTE:** At contractor-operated maintenance activities, the QAE office must coordinate on the report.) The DOP monitor will also ensure each dropped object incident is reported by telephone to the HQ AETC/LGMA aircraft functional manager within 3 hours during duty hours or at the beginning of the next duty day after notification of the occurrence. As a minimum, the DOP report will include the:

- 14.7.2.5.1. Name, grade, functional address symbol, and telephone number of individual making the report.
- 14.7.2.5.2. Owning unit and base.
- 14.7.2.5.3. Aircraft MDS and tail number.
- 14.7.2.5.4. Object dropped (noun, panel number, part number, TO, figure, index, weight, size, and cost).
- 14.7.2.5.5. Aircraft damage, if any.
- 14.7.2.5.6. Damage to private property or personnel injury, if any.
- 14.7.2.5.7. Origin of sortie.
- 14.7.2.5.8. Date of incident and discovery location if different than origin of sortie.
- 14.7.2.5.9. Number of sorties since last maintenance in the area of the dropped object.
- 14.7.2.5.10. Number of sorties that day before the object dropped.
- 14.7.2.5.11. Date and hours flown since last PE, phase, or ISO inspection.

- 14.7.2.5.12. Probable cause, if known.
- 14.7.2.5.13. Aircrew (dual, solo student, solo functional check flight, etc.).
- 14.7.2.5.14. Mission type (contact, navigation, formation, refueling, airlift, etc.).
- 14.7.2.5.15. Maneuver or aircraft configuration when the object was dropped, if known.
- 14.7.2.5.16. Geographical location of the dropped object, if known.
- 14.7.2.5.17. Airspeed and altitude, if known.
- 14.7.2.5.18. Whether proper forms entries were made for previous maintenance.

14.7.2.6. Media Interest. When possible media interest is determined, the DOP monitor will ensure the local command post accomplishes initial dropped object BEELINE reporting according to AFMAN 10-206, *Operations Reporting*.

14.7.2.7. Transient Aircraft. The wing DOP monitor will investigate dropped objects from a transient aircraft. The wing DOP monitor will provide the home-station DOP monitor with sufficient data to generate a report for trending and tracking purposes.

14.8. Aircraft Engine Compressor Stall and/or Flameout. In coordination with QC or QA, the senior engine maintenance supervisor will investigate all J69 and J85 engine ground or in-flight compressor stalls and flameouts. Investigation findings will be reported according to [Attachment 2](#).

Chapter 15

AIRCREW DEBRIEFING

15.1. Responsibilities:

15.1.1. The group commander (LG, OG, or MA) will establish a debriefing capability between maintenance and aircrews to assess, describe, and record in-flight discrepancies (paragraph 15.2.). (This capability need not be centralized and may be located within the operations squadrons.) Maintenance debriefing personnel will ensure adequate troubleshooting information and flight data are provided by the aircrew, documented on AFTO Forms 781A and 781H, and entered into the automated MMS. The debriefing function will provide debrief capability covering the entire weekly flying period.

15.1.2. To help record fault-related data, each unit will develop debriefing guides. As a minimum, these guides will contain detailed procedures identifying responsibilities such as aborts or IFEs, dropped object reporting, flight control malfunctions (commanded or uncommanded), and engine malfunctions.

15.1.3. F-15 and F-16 units will use fault reporting manuals instead of debriefing guides. They will use the computerized fault reporting system (CFRS) as the primary debriefing instrument, if available.

15.2. Procedures for Debriefing Aircrews. The debriefing function has overall responsibility for the debriefing process and is the focal point for in-flight data input for assigned aircraft. The following guidelines are minimum requirements, which may be supplemented by local MOIs or wing instructions to reflect specific weapon system or wing requirements: (**NOTE:** Aircrew will input all required debrief data when using CFRS.)

15.2.1. The following landing status codes will be used to describe aircraft condition status:

15.2.1.1. Code 1--No maintenance discrepancies were noted during the sortie.

15.2.1.2. Code 2--Aircraft has minor discrepancies, but maintenance is not required prior to the next sortie.

15.2.1.3. Code 3--Aircraft has discrepancies that must be repaired prior to the next sortie.

15.2.1.4. Code 4--Aircraft or system has suspected or known radiological, chemical, or biological contamination.

15.2.1.5. Code 5--Aircraft or system has suspected or known battle damage.

15.2.2. All aircrews will participate in the debriefing process. They will notify the MOC (or appropriate maintenance activity as designated by the OG commander) of aircraft status by ultra high frequency (UHF) radio transmission prior to arrival for all aircraft status codes (code 1, 2, 3, 4, and 5). UPT or SUPT units need not relay code 1 status to maintenance prior to arrival. Debriefing may be suspended during sortie surges when aircraft are scheduled for turnaround sorties and returned in code 1 or 2 status. All code 3, 4, and 5 aircraft will be debriefed by the debriefing function. However, debriefing is required for all aircraft, regardless of status, after the last flight of the day. In all cases, discrepancy information, including restrictive flight discrepancies (for example, solo only), will be relayed to MOC as soon as possible. After flight, aircrews will report to the debrief function and enter the discrepancy and flight information in the applicable AFTO 781-series forms.

15.2.3. Debrief personnel will input discrepancy information, utilization, and applicable flight data (to include landing status and cause code) into the automated MMS (paragraph 1.18.). Expeditors or production superintendents will ensure completed AFTO 781-series forms are provided to the debrief function by the end of the flying day if debriefs have been suspended due to surges. Local backup procedures will be used for recording data when the automated MMS becomes inoperable.

15.2.4. In case of a ground abort, the aircrew will make the AFTO Form 781A writeup on the abort and move to the spare aircraft, if available. Maintenance will then debrief the aircraft with the maintenance debrief personnel. If a spare aircraft is not available, the aircrew will debrief the aircraft with the debrief personnel.

15.2.5. The QC or OG QA will debrief FCF flights. The QA may suspend the debrief of FCFs on helicopters requiring multiple sorties as follows: until the successful completion of the FCF or OCF, at the termination of the FCF or OCF attempts for that flying day, or upon crew change (paragraph 4.5.).

15.2.6. The QC or OG QA may assist wing safety (as required) in debriefing IFEs at the debriefing function. The MOC will notify these individuals for attendance at the debrief.

15.2.7. Units with en route or transient aircraft maintenance requirements will develop local procedures for debriefing cross-country aircraft.

15.2.8. Repeat and recurring discrepancies must be identified in the AFTO Forms 781A and in CAMS. Locally established procedures will be used to identify and process repeat and recurring discrepancy information. Work orders initiated to clear a repeat or recurring discrepancy must indicate "repeat" or "recur" as applicable. **NOTE:** To be identified as repeat or recurring, the first discrepancy must have had a completed maintenance action and all required operational checks.

15.2.8.1. A repeat discrepancy is a similar discrepancy on the same subsystem or component that occurs on two consecutive sorties (or attempted sorties).

15.2.8.2. A recur discrepancy is a similar discrepancy that occurs two or more times within five consecutive sorties (or attempted sorties).

15.2.9. Airborne data recording systems (including C-5 MADARS, flight data, engine history, or video recorders that provide data to maintenance functions) may be used to initiate maintenance requirements after flight.

15.2.10. The debriefing function or aircrew member (as determined locally) will remove the AF Form 664, **Aircraft Fuels Documentation Log**, if applicable, from the forms binder and forward it to the aircrew for delivery to the document control officer (AFI 23-202, *Buying Petroleum Products, and Other Supplies and Services Off-Station*). When aircraft are refueled at a non-Air Force activity, this function will also collect AF Form 15 for later processing by accounting and finance.

Chapter 16

CANNIBALIZATION PROGRAM

16.1. Definition. Cannibalization is the authorized removal of a specific assembly, subassembly, or part from one weapon system, system, support system, or equipment end item for installation on another end item to meet priority mission requirements, with an obligation to replace the removed item (TO 00-20-2).

16.2. Elements. There are four critical elements necessary to execute a cannibalization action--authorization, removal, item to be removed, and priority mission requirement--as follows:

16.2.1. Authorization. For aircraft cannibalization, the squadron maintenance officer (or equivalent) will designate personnel by position or name to authorize aircraft-to-aircraft, aircraft-to-engine, and engine-to-aircraft cannibalizations. These personnel are referred to as cannibalization authorities (CA) and are normally production superintendents (paragraph 2.4.). This designation may be for all cannibalizations within selected functional areas, such as flight line, PE, aero repair, or a combination thereof. For engines, the propulsion function supervisor, in coordination with the BEM, will authorize engine-to-engine cannibalizations. For AGE, the AGE function supervisor will authorize AGE-to-AGE cannibalization. Maintenance function supervisors will authorize test station-to-test station cannibalization.

16.2.2. Removal. For a cannibalization to occur, the item to be cannibalized must be removed from the system or end item for the sole purpose of installing it on another system or end item. A component already removed cannot be cannibalized. That is, changing the destination of a component already removed is a transfer or diversion action, *not* a cannibalization.

16.2.3. Item To Be Removed. The item to be cannibalized will be an assembly, subassembly, or part that is removed from one end item for installation on another end item. If an assembly is cannibalized to satisfy a condition caused by lack of bits and pieces (for example, washers, nuts, and bolts), the assembly is counted as a cannibalization and the bits and pieces are considered transfer actions. Bits and pieces removed from an end item (without removing the assembly) for installation on another end item are considered individual cannibalization actions.

16.2.4. Priority Mission Requirement. Priority mission requirements include cannibalization to meet flying schedule commitments, timely completion of a major inspection (PE, phase, or ISO), or major maintenance actions. Priority mission requirements do not include cannibalization of a component when the unserviceable component can be repaired before the end item's requirement for a serviceable component. An item will not be cannibalized solely to attain a mission capable rate or any other statistical yardstick.

16.3. Limits. The CA will ensure only authorized cannibalizations are permitted. However, cannibalization of CAD/PAD items must be approved by the MA (for contract maintenance units) or group commander.

16.4. Procedures. The CA will determine the equipment to be cannibalized and the latest time the cannibalization action may be initiated. When a required part cannot be delivered and installed on time, the CA may approve the cannibalization of parts before the initiation of cannibalization documentation. He or she will give this approval only after confirming the part is not readily available in supply, fast launch trucks,

forward supply points, or the repair cycle. The CA, propulsion supervisor, or AGE supervisor, as applicable, will notify the supply MICAP section to change the mark-for components in the document number. He or she will also ensure complete documentation is accomplished for each cannibalization action.

16.5. Transfer Actions. Transfer actions are those management actions taken to transfer a reported MICAP condition from one end item to another. Transfer actions may also include changing the mark-for components in the repair cycle.

16.6. Diversion Actions. A diversion action occurs when maintenance indicates an action was taken to divert a dueout release (DOR) for one MICAP condition to satisfy another MICAP condition.

16.7. Documentation and Reporting. Specific documentation procedures for cannibalizations are prescribed in TO 00-20-2, Section 5. In addition:

16.7.1. All cannibalizations will be recorded in the automated MMS (paragraph 1.18.), but AETC Form 1158, **Cannibalization Control Register**, will be used as a backup system. The applicable group commander will designate a centralized function to file AETC Forms 1158, monitor the cannibalization program, and complete in-house reconciliations with the D04. The group commander will also develop specific policies and procedures to ensure control of the cannibalization process. On at least a weekly basis, copies of all AETC Forms 1158 will be forwarded to the supply MICAP function for reconciliation with the supply system.

16.7.2. When a serially controlled component is considered for cannibalization, the CA will coordinate with the appropriate PS&D or EM to ensure adequate time remains on the item to justify the cannibalization and to ensure appropriate records are updated. If cannibalization occurs, the performing work center will update CAMS and notify PS&D or EM. When the appropriate group commander approves cannibalization of CAD/PAD items, the CA will follow the procedures for serially controlled components.

16.7.3. Transfers or diversions of munitions items must be coordinated with the MASO, and all documentation is the responsibility of the applicable account custodian.

Chapter 17

SUPPLY

17.1. Supply Discipline. Supply discipline is a responsibility common to all maintenance personnel and activities.

17.2. Supply Priorities. To ensure supply program integrity and prevent supply abuse, maintenance functions must be familiar with the supply priorities outlined in AFMAN 23-110, Volume 2, Part 13; AFI 21-101; and AFI 32-7086.

17.2.1. On-base delivery and supply priorities are determined by the criteria outlined in **Table 17.1**. Local procedures between maintenance and supply may be established to outline the use of onbase delivery or supply priorities to meet specific mission needs.

17.2.2. AETC units maintaining ground instructional training aircraft (GITA) and training equipment are authorized the use of the higher force activity designator (FAD) of the operational command (for example, Air Combat Command or Air Mobility Command) when a lack of training equipment or parts will degrade training. This option will only be used when a delay in training will adversely impact the training schedule of students in critical specialties destined for operational commands with a higher FAD than the training wing. (See AFI 36-2606, *Reenlistment in the United States Air Force*.) The use of this option must be rigidly controlled to prevent priority abuse. The FAD override will be exercised on initial backorder verification if a lack of equipment or parts critically affects training. Training activities will provide all requests for use of a higher FAD to the maintaining activity. Requests will cite the impact on training and be signed by the training wing resource advisor.

17.3. Supply Request Procedures. The CAMS/SBSS interface is the preferred method for requisitioning needed expendable (XD, XF, and XB) assets, including FAST. (Nonexpendable equipment items [NF] will not be ordered through CAMS.) If CAMS is nonoperational or not available, alternate methods may be used in accordance with established policies reflected in local MOIs or wing instructions. For COMBS, use telephone, in-person requisitioning, and in-person pickup.

17.3.1. Organizations with CAMS will use AF Form 2413 as a manual backup when CAMS becomes nonoperational. Organizations without CAMS will use AF Form 2413 as the primary source document for supply transactions.

17.3.2. The requesting activity will retain AF Forms 2413 and 2005, as applicable, for verification and reconciliation with the D04.

17.3.3. Supply issues to transient Air Force aircraft must contain the shop code table of allowance (according to TOs 00-20-2 and 00-20-5). Ensure the correct owning command code and applicable standard reporting designator (SRD) are documented.

Table 17.1. Supply Delivery and Maintenance Repair Designators.

I T E M	A	B	C
	Supply and Maintenance Repair Priority Designator	Application	Supply Delivery Time
1	1	Aerospace vehicle on alert status, war plan, or national emergency, including related SE, munitions, munitions equipment, and CE equipment.	As soon as possible, but no later than 30 minutes
2	2	Primary mission air vehicles, missile support aircraft, air-launched missiles and related SE, munitions, munitions equipment, and CE equipment for the first 8 hours after landing, start, or recovery; within 6 hours of a scheduled launch, alert, or test flight; or during a simulated generation ORI/UEI.	
3	3	Primary mission air vehicles, missile support aircraft, engines, air-launched missiles, related SE, munitions, munitions equipment undergoing scheduled or unscheduled maintenance, and transient air vehicles not otherwise listed. Administrative aircraft within 8 hours of a scheduled flight or on alert status with standby crews. TCIs for nuclear weapons. Scheduled and unscheduled maintenance of munitions, which, if not performed, will prevent or delay mission accomplishment. TMDE requiring emergency repair or calibration, which, if not performed, will prevent or delay mission accomplishment. Spares not available in supply. Routine maintenance of aircrew or missile training simulator, other training devices or related SE or sites, and aircraft or equipment used for maintenance training. Avionics shop electric SE and automated test stations.	As soon as possible, but no later than 1 hour
4	4	Routine or extensive repair of primary mission air vehicles and related AGE. Administrative aircraft undergoing scheduled or unscheduled maintenance and TCTO compliance of war reserve spare kit materiel. Scheduled calibration and unscheduled repairs of TMDE not listed above. Extensive repair of aircrew missile training simulator, other training devices, or related SE.	As soon as possible, but no later than 4 hours
5	5	Nontactical or nonprimary aircraft undergoing extensive repair. TCIs. Bench stock requirements.	As soon as possible, but no later than 8 hours
6	6	Equipment requirements. Other nonaeronautical requirements.	As soon as possible, but no later than 12 hours

	A	B	C
I T E M	Supply and Maintenance Repair Priority Designator	Application	Supply Delivery Time
7	7	Spares excess to base requirements.	Not applicable

17.4. Quick Reference Lists (QRL). Supply QRLs are composed of fast-moving, high-usage items required for primary mission equipment. If QRLs are used, the following applies:

17.4.1. Each QRL must be jointly agreed on by the chiefs of supply and maintenance.

17.4.2. The QRL will be printed in alphabetical sequence by aircraft system. It will be updated at least twice a year when changes have been made.

17.4.3. Maintenance will send supply proposed additions to the QRL by stock or part number, WUC, and TO, figure, and index numbers. The TO, figure, and index numbers should be included to ensure updates to TCTOs and illustrated parts breakdown changes are reflected in the QRL.

17.4.4. In coordination with supply, maintenance may establish special requirements lists for recurring requirements when six or more requirements exist (for example, a major aircraft PE). If this option is used, the lists will use QRL numbers.

17.5. Demand Methods. The type of demand method used is determined by the UJC. There are two types of demand methods used; "fill or kill" and "fill or backorder."

17.5.1. All UND As (except UJCs AO, AU, and AR) and UJC BQ will be processed as fill or kill. A zero balance condition will result in a killed transaction exception (TEX) code 4. At this point, verification begins ([Chapter 18](#)).

17.5.2. UJCs AO, AU, AR, and all UND Bs (except UJC BQ), and all UND Cs will be processed as fill or backorder. A zero balance condition normally results in the automatic establishment of a backorder, which is called a dueout.

17.6. Verification Procedures. Verification is the process used to determine the actual need for the asset ordered and to verify the asset is not located on base (prior to off-base requisition action). The type of verification used is dependent on the demand method (AFMAN 23-110, Volume 2, Part 13).

17.6.1. Fill or backorder demands will be considered preverified requests. Verification will be performed by the requesting maintenance activity prior to placing a demand on supply for a needed asset.

17.6.2. Fill or kill demands will be verified when there is a zero balance condition on a needed asset. When a zero balance condition is determined by supply, the transaction will be killed and verification will begin. Supply (materiel control, FAST) is the OPR for verification.

17.6.2.1. If supply does not have the asset available for issue, they (materiel control, FAST) will forward a killed action notice through CAMS via an I024 management notice with an I023 (other assets management listing). Non-CAMS organizations will be notified by phone and the I023.

17.6.2.2. Killed requests satisfied from maintenance resources (bench stock or repair and reinstallation) will be verified with supply.

17.6.2.3. The verification time limit for UND As and UJC BQ requirements is 4 hours. Asset listings for items that require more than 4 hours for bench check, NRTS actions, or condemnation may be established on an individual item basis when coordinated with supply.

17.6.2.4. Tenant units are not required to use AF Form 2414 at locations where verification responsibilities are assumed by the host supply function.

17.7. Delivery. The supply delivery expediter will deliver requested items to the needed maintenance location within the delivery times listed in AFI 21-101. **EXCEPTIONS:**

17.7.1. If an asset is stored in a forward supply point or FAST, the maintenance technician will pick up the item.

17.7.2. Buildup items, such as tires and engines requested directly from maintenance shops, will be delivered by maintenance.

17.7.3. When it is more practical or faster to repair, return, and reinstall an item, it will be transported by maintenance.

17.7.4. When CLS provisions or local policies establish alternate procedures.

17.7.5. If the wrong asset or an unserviceable item is delivered, as follows:

17.7.5.1. If maintenance was not responsible, refuse the item and annotate "Organizational Refusal" on the DD Form 1348-1A, **Issue Release/Receipt Document**, except where local or contract agreements indicate alternate procedures. Ensure a reverse post procedure is processed by supply to recover any funds expended on the transaction and reestablish the requirement.

17.7.5.2. If maintenance was responsible, prepare and process a TRIC turn-in according to AFMAN 23-110, Volume 2, Part 2. Reverse posting of funds for assets that were erroneously ordered by maintenance will not be guaranteed. ISU, DOR, and DUO transactions that were a result of a misorder and subsequently received or canceled should be evaluated for reverse posting of funds. In these situations, reverse post transactions may be possible based on the stock level or ERRC designator of the asset.

17.8. Bench Stock. The purpose of bench stock is to increase productivity by pre-positioning high consumption expendable assets at specified locations in advance of their actual need.

17.8.1. Bench stock is composed of XB3 assets and expendable items purchased with the international merchant purchasing authorization card (IMPAC). However, the use of IMPAC is not authorized to purchase weapon system expendable assets for inclusion into bench stock. XB3 assets coded TCTO, unacceptable for Air Force use, critical, classified, or sensitive will not be included in bench stock. XD and XF repairable assets are not authorized on bench stock.

17.8.2. Bench stock assets that have been classified or coded as pilferable items will be maintained in a secure area. Consider securing pilferable items within an existing tool facility or relocating the assets to a secure locker or cabinet within the bench stock area.

17.8.3. Hazardous materials will not be authorized on bench stock (AFI 32-7086/AETC Sup 1).

17.9. Establishing a Bench Stock. Setting up a bench stock is a coordinated effort between maintenance and supply (AFMAN 23-110, Volume 2, Part 2, Chapter 25). The following guidance is provided for all AETC units maintaining bench stock locations:

17.9.1. Squadron commanders will determine, in writing, the maximum per unit dollar value threshold for items maintained in assigned bench stock locations. To exceed that dollar threshold for any item will require the approval of the applicable group commander. The supply commander will file copies of the squadron commander's memorandum and group commander's approval memorandum.

17.9.2. Squadron commanders should ensure bench stock quantity levels are reviewed periodically (to determine if established levels are consistent with current demand) and adjust levels accordingly.

17.9.3. For contract organizations, the group commander will have squadron commander responsibilities and group commander approval authority.

17.9.4. Items purchased using IMPAC may be maintained on bench stock with the following provisions:

17.9.4.1. A readily identifiable method will be developed to distinguish between items purchased using IMPAC and items procured through supply (for example, the use of distinctive colored labels [with IMPAC in bold letters], bin locations, or a segregated area). Labels will also contain the nomenclature, authorized level, and bin location number.

17.9.4.2. To maintain consistency and prevent out-of-stock conditions, bins containing IMPAC items will be marked or flagged for repurchase, using the same procedures as supply-procured items.

17.9.4.3. Reviews of local purchased items will be performed in conjunction with normal bench stock reviews to identify any needed adjustments. Local procedures will be established for coordinating additions, deletions, or changes to IMPAC-purchased items kept on bench stock.

17.10. Bench Stock Maintenance. Bench stock maintenance will be performed by maintenance functions on a daily basis. (Weekly and monthly maintenance will be performed according to AFMAN 23-110, Volume 2, Part 2, Chapter 25.)

17.11. Out-of-Stock Procedures. When an empty bin is discovered prior to normal bench stock replenishment, submit the following: (**NOTE:** These procedures apply to supply-managed items only.)

17.11.1. A routine empty bin requirement if there is no immediate need for the asset. Process routine refills through CAMS (TRIC BSR), if available. If CAMS is not available or nonoperational, submit the request to the bench stock support element (BSSE).

17.11.2. A priority (urgent) empty bin requirement if there is anticipated need for the asset. Process a request for priority refill through CAMS (TRIC BSR) by entering Y in the priority fill input field. If CAMS is not available or nonoperational, submit the request to the BSSE.

17.11.3. Immediate requirements through CAMS or to the demand processing element if an immediate need for the asset exists and a dueout was previously established for the bench stock asset. Process immediate requirements through CAMS for the exact quantity needed against the end item. If CAMS is not available or nonoperational, submit the request directly to the demand processing element.

17.12. Bench Stock Reviews. Bench stock reviews will occur on a monthly or quarterly basis (as determined by the chief of supply) and, if required, a more comprehensive review will be accomplished semi-annually (AFMAN 23-110, Volume 2, Part 2, Chapter 25). The bench stock function will:

17.12.1. Perform a bench stock review by using the M04 report (Part 1, recommended bench stock additions; Part 2, changes; and Part 4, deletions). **NOTE:** This applies to supply managed items only.

17.12.2. Review recommended bench stock additions, deletions, or changes to determine any adjustments to the bench stock. Establish local procedures for coordinating additions, deletions, or changes (for example, memorandums and phone calls).

17.12.3. Perform an annual validation of SRDs and minimum reserve authorizations (MRA).

17.13. Adjusting Bench Stock Levels. Existing bench stock authorized quantities can be adjusted by establishing a maximum authorized quantity (MAQ) or an MRA that will manually override computed quantities, as follows:

17.13.1. MAQs will be used to establish a maximum quantity level of a bench stock asset. When an MAQ is compared to the computed quantity, the authorized bin quantity will be the lesser of the two (for example, comp qty 50, MAQ 25, auth qty 25; comp qty 15, MAQ 25, auth qty 15).

17.13.2. MRAs will be used to establish a minimum quantity level of a bench stock asset. When an MRA is compared to the computed quantity, the authorized quantity will be the greater of the two (for example, comp qty 40, MRA 50, auth qty 50; comp qty 80, MRA 50, auth qty 80).

17.14. Shelf Life Assets. Once shelf life items are placed in bench stock, control of these items is the responsibility of the owning work centers. Shelf life items are identified in TOs (by markings on the package) and in the bench stock (by the color-coded bin labels). If the shelf life item is packaged in a unit pack, the unit pack containing a quantity nearest the recommended level will be issued as the authorized bench stock quantity. **NOTE:** Hazardous materials are not authorized on bench stock.

17.15. Contractor Logistic Support (CLS) Bench Stock. Maintenance functions will flag a bin when the bin quantity reaches 50 percent or less and notify the CLS function when an out-of-stock condition exists in the bench stock. (Bench stocks operated by CLS functions are excluded from the requirements in paragraphs 17.9. through 17.14. unless required by the specific contract.)

17.16. Flight Line, Site, and/or Mobile Bench Stock. Flight line and site bench stocks will be provided for on-equipment maintenance. These bench stocks may be either mobile or fixed. The owning flight or section must coordinate with the servicing bench stock to establish procedures for restocking mobile bench stocks. One bench stock will be authorized for each area. Where two or more shops are collocated in the same room or area, a single bench stock for the combined requirements may be established. Selected bench stock items may be placed on flight line expediter trucks. The following guidelines apply:

17.16.1. Items will be obtained from an established bench stock.

17.16.2. Only items essential to launch and recover aircraft are authorized. Quantities of items on trucks should not exceed a 10-day supply. Expediters are responsible for replenishing items. Each bin must have a locally devised label which includes the stock number, bench stock line number (document number), and quantity authorized in the truck bin.

17.17. Shop Support Stock. Shop support stock will consist of all items necessary to operate a maintenance function that are not normally included in bench stocks.

17.17.1. Consumable items, such as gas cylinders, random length bar stock, sheet metal, plastic, fabric and recovered items (connector dust covers, and hydraulic line caps and plugs) may be maintained in shop support stock. Expendable bits and pieces left over from maintenance work orders (work order residue) may be retained in shop support stock if future requirements exist and the items are not maintained in bench stock. Items in shop support stock will be identified on a bin label by noun, and part number or stock number, if available.

17.17.2. The applicable group commander may approve the grouping of assets when it is impractical to individually identify items, such as bar stock, sheet metal, and angle iron. Grouped items need not be individually identified. When shop support items are to be used for local manufacture or trainer fabrication projects, those items must be clearly identified for use on those projects. When feasible, those items should be removed from shop support stock and placed in an appropriate project holding area.

17.17.3. If items such as safety wire, solder, lubricants, and sealant are routinely used at a workstation, they may be kept at the workstation. This does not include hardware such as nuts, bolts, and screws (aircraft or equipment parts). The work center supervisor will identify what items are kept at each workstation.

17.17.4. Bits and pieces (work order residue) will be stored in shop support stock. Bin labels will indicate the stock or part number, if available, and noun. The bench stock monitor will review work order residue to ensure unit packs are consolidated. Bin labels may have additional information on them as long as the system is standardized. If there is no anticipated need for these items, they will be turned in to supply; they will not be discarded. **NOTE:** Because shop support stock is not intended to replace bench stock, bits and pieces will not be replenished when the stock is expended.

17.18. Dueout Release (DOR) Points and Tail Number Bins (TNB). The LG and OG commanders and chief of supply will determine locations for DOR points as follows:

17.18.1. Supply (FAST) will establish holding bins for each aircraft by tail number (or equipment serial number) and control the parts located in TNBs. Parts will not be released from the TNB without review of CAMS. A common bin may be set up for a maintenance function rather than by tail number. Establish local procedures for issuing parts out of the TNB for buildup or bench check before installation. Ensure procedures include the requirement to return the part to the TNB after buildup or bench check if the aircraft is not available for work. Store bits and pieces for accomplishment of non-kitted TCTOs in the TNB or another controlled area and issue them on an as-required basis to accomplish the TCTOs. Label TCTO kit containers with the proper stock numbers and TCTO number if they are not stored in the TNB. Devise a means of controlling multiple issues of parts against a single aircraft tail number.

17.18.2. Supply will place items received to the TNB DOR point into the appropriate aircraft, flight, or section bin, as applicable. When MICAP items are received, supply will notify the appropriate maintenance function. Maintenance will then decide whether to take receipt of the MICAP item at the designated DOR point or have supply place it in the TNB. All aircraft DORs for deferred discrepancies (UJC BQ and CQ) will be delivered by supply to the TNB DOR point. Deferred discrepancies will then be managed according to [Chapter 10](#).

17.18.3. Normally, critical items will not be allowed to remain in the bins longer than 3 days if the aircraft is at home station and installation of the part would bring the aircraft to at least a partial mission capable status. Partial issues of multiple parts requirements may be placed in the TNBs until all required parts necessary to clear a specific discrepancy are received. Normally, the parts in a TNB for aircraft undergoing a scheduled inspection will be installed.

17.18.4. Supply will notify the owning flight or section of all repair cycle items received by DOR. The owning flight or section will also be notified each time a repair cycle asset is removed from TNB for subsequent issue or return to supply. (Coordination and complete documentation is required to ensure DIFM assets are controlled and the deferred discrepancy files are updated.)

17.18.5. A required item issued and delivered for an assigned aircraft after its departure from home station will be processed the same as a DOR. Supply will advise the owning flight or section and place the item in the TNB. An item issued and delivered to an assigned aircraft that cannot be installed will be delivered to the TNB with the receipt documents (DD Form 1348-1). This item will be handled the same as a DOR. An item issued for an aircraft will not be stored in the performing work center.

17.19. Precious Metals Recovery Program (PMRP). PMRP requirements will be established and performed as specified in AFMAN 23-110, Volume 6, Chapter 4, *Excess and Surplus Personal Property*, including MAJCOM and unit supplements.

17.20. Wastebuster Program (Turn In of Consumable and Expendable XB3 Material and Scrap). All serviceable and unserviceable XB3 assets having potential use or resale value (in whole or scrap) will be collected and turned in to base supply for reissue, repair, or disposal as scrap. Maintenance functions will ensure an effective wastebusters program is established and managed as outlined in AFMAN 23-110, Volume 2, Part 13.

17.21. Dueout Followup Actions. Maintenance will:

17.21.1. Follow up daily on all routine and priority dueout mission requirements. Ensure followup management actions are tailored to specific maintenance needs rather than to a system of arbitrary followup. Information necessary for followup may be obtained from the priority monitor report (R01) dueout validation listing (M30 or optional R31), by telephone, or by the use of locally developed followup memorandums (AFMAN 23-110, Volume 2, Part 2).

17.21.2. Review assets appearing on the R01 for status and need. Direct any inquires to the supply function. Before canceling any established firm dueout, contact supply to determine if current fiscal year obligated funds can be recovered. Arbitrary cancellation of dueouts may result in lost organizational funds as well as the asset. At times it may be prudent to allow the asset to come into the base and be used by another function through transfer action or turn-in and subsequent free issue. If present or future use by another function is not anticipated, cancel the dueout.

17.21.3. Forward difficulty memorandums to supply (AFMAN 23-110, Volume 2, Part Two).

17.21.4. Take followup action to resolve a cancellation when a request is canceled by supply. Verify the need and, if necessary, perform additional research. Supply will also take action to resolve the cancellation or reverse posting of funds.

17.22. Use of AF Form 1996, Adjusted Stock Level. AF Form 1996 will be used to justify special levels when the demand level, as established by past consumption, is not adequate to support future stock requirements or temporary demand increases (AFI 21-101 and AFMAN 23-110, Volume 2, Part 13).

17.23. Equipment Acquisition. Supply will provide technical and research assistance in the preparation of documents required to obtain support and test equipment.

17.24. Materiel Control Support (Kirtland AFB). Responsibilities of materiel control within support function will be established in a local MOI.

17.25. Supply Asset Support for AGE. Specific supply asset control responsibilities may be decentralized to the AGE function. If this option is used, the AGE function will:

17.25.1. Control off-equipment work for which a repair capability exists in the AGE function. Maintain status of DIFM assets with the repair cycle support section (RCSS).

17.25.2. Maintain the deferred-due-to-maintenance and deferred-due-to-parts files for the AGE function. Control the assets located in the holding bins awaiting installation.

17.25.3. Maintain AF Form 2413 or AF Form 2005 for demands made on the supply system and verify UND A and UJC BQ conditions with supply. AF Form 2414 may be used instead of AF Form 2413 or 2005. Perform daily followup with supply on reportable MICAP conditions.

17.25.4. Monitor DOR points.

17.26. Reports and Listings. Various reports and listings are available from the SBSS. Some of these reports are automatically distributed to maintenance functions; others are produced and distributed based on local requirements. See AFI 21-101, Attachment 3, for a listing of supply reports available for use by maintenance to control and track supply transactions.

Chapter 18

REPAIR CYCLE ASSET MANAGEMENT SYSTEM (RCAMS)

18.1. Management of RCAMS. Air Force policy requires all action be taken to ensure components, assemblies, and subassemblies are managed and repaired at the lowest level of maintenance consistent with mission, capability, and economic feasibility (TO 00-20-3, *Maintenance Processing of Repairable Property and Repair Cycle Asset Control System*). The overall objective of the AETC RCAMS is to prioritize repair of repairable assets based on actual mission needs, process assets through the repair cycle as quickly as possible, accomplish quality repair actions, and maximize repair capability while maintaining the control of the repair process at the work center level (paragraph 1.8.15.). **NOTE:** For bases where CAMS equipment capability does not exist within maintenance, develop local procedures to manage repairable assets throughout the repair cycle in an MOI. Ensure the intent of this chapter is maintained.

18.2. Organization and Responsibilities. The HQ AETC RCAMS will use the decentralized scheduling method and concepts prescribed in TO 00-20-3. The RCAMS is composed of three separate but interdependent elements--the maintenance repair cycle monitor (RCM), who is the point of contact for management of the repair cycle, as assigned by the LG function; the maintenance work centers repairable asset managers (RAM); and the supply RCSS.

18.2.1. Work Center RAMs. Work center RAMs are the key ingredient in a successful and efficient repair cycle. They have the overall responsibility for management of assets repaired in their shops. Work centers having condemnation or NRTS authority for a repairable asset are considered the asset's prime repair work center. RAMs have authority to control, schedule, prioritize, store, and process repairables in their respective work centers, and they must be aware of the status of all repairable assets. Status includes assets in base supply, assets in the repair cycle, consumption history, MICAP requirements, cross-cannibalization options, and priority of assets to be repaired. RAMs will:

18.2.1.1. Receive and schedule all repairable assets (CAMS input) through their work centers (AFCSM 21-559, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Automatic Test Equipment Reporting System (ATERS), Users Manual*).

18.2.1.2. Control and provide storage for AWM assets. Work centers will also provide secure storage for AWP assets for which they are the prime repair work center.

18.2.1.3. Expeditiously move all repaired, NRTS, or condemned assets in the repair cycle to the next work center or RCSS.

18.2.1.4. Control cross-cannibalization of repairable asset bits and pieces (TO 00-20-3 and applicable MOIs or wing instructions).

18.2.1.5. Process supply assets requiring buildup, maintenance, functional check, or calibration prior to issue.

18.2.1.6. Perform a daily DIFM and turnaround (TRN) transaction reconciliation. (TRNs can be verified by checking the DOR.) Failure to provide correct and timely TRN transaction data to supply will result in reduced base stock levels and incomplete reports from which buy, repair, and distribution decisions are made. AF Form 2521, **Turnaround Transaction Log**, may be used as a manual backup or for reconciliation of TRN transactions.

18.2.1.7. Use CAMS and SBSS repair cycle products to establish work center production schedules and priorities, manage the flow of assets through the repair cycle, and ensure status is updated as changes occur.

18.2.1.8. Identify and monitor levels of critical assets where the shop is the prime work center.

18.2.1.9. Ensure assets identified as critical on the repair cycle data listing (D23) are afforded appropriate maintenance repair priority.

18.2.1.10. Ensure reparable asset documentation is complete and assets are properly tagged and secured in their reusable containers, if applicable, before turn-in to RCSS.

18.2.2. RCM Function (Maintenance). The RCM function is responsible for monitoring the RCAMS, except reparable assets managed within the PMEL and the ground base training system. In coordination with the LG and OG QAs, the RCM will establish an MOI or wing instruction that describes local repair cycle management procedures. In addition, the RCM will:

18.2.2.1. Monitor the management of DIFM asset processing through the repair cycle, and be the focal point for rectifying DIFM problems with RCSS.

18.2.2.2. Review and analyze CAMS and SBSS repair cycle data products.

18.2.2.3. Monitor asset repair cycle time through RCAMS.

18.2.2.4. Perform local manufacture responsibilities as outlined in paragraph **18.8**.

18.2.2.5. Ensure the procedures for the intermediate repair enhancement program (IREP) are followed (**Chapter 21**).

18.2.2.6. Collect and submit data for maintenance repair capability as required.

18.2.2.7. Participate in maintenance planning meetings as necessary.

18.2.2.8. Ensure the RCAMS supports tenant unit reparable asset requirements according to AFI 25-201 agreements.

18.2.3. RCSS Function (Base Supply). The RCSS will process all property within the maintenance complex for turn-in to supply. The RCSS is responsible for direct routing of serviceable, NRTS, preservation, and condemned assets. Supply documentation will be accomplished through the remote SBSS terminal.

18.3. Repair Cycle Asset Processing. The RCSS function is responsible for repair cycle asset processing according to AFMAN 23-110, Volume 2, Part 2, Chapters 2 and 24. Prior to any asset repair action, a demand for a serviceable asset will be placed on supply unless the activity is to be a TRN. Reparable asset processing through the repair cycle will be accomplished by a DIFM firm, DIFM memo, or TRN transaction. ERRC-designated XD or XF assets are DIFM assets. ERRC-designated XB assets ordered using activity code C (C deck transactions) are also DIFM assets (paragraph **18.6.2**). DIFM firm ISU or DOR transactions (except initial issues [demand code I]) require a one-for-one exchange of an asset.

18.3.1. A DIFM firm detail transaction will occur when there is an issue transaction or when a memo DUO is subsequently firmed up (TEX code M), establishing a valid DUO.

18.3.2. A DIFM memo (memo DUO) will be used to establish "repair cycle visibility" and create a "mark-for" for AWP assets. DIFM memos will only be used when there is a zero balance condition in base supply for a needed asset and repair action is authorized or attempted. On notification of a zero

balance condition, the killed transaction will be reloaded using TEX code 7. (By using TEX code 7, the DIFM asset will gain visibility on the D23 repair cycle listing.) Because the asset document number remains valid by using the TEX 7, AWP bits and pieces can be ordered using the DIFM memo document number as the "mark-for." If the asset is repaired, process a turn-in TEX 2 to ensure the asset is released to the proper end item.

18.3.2.1. Assets that cannot be repaired must be turned in to base supply. The DIFM memo document number will have to be firmed up so a valid DUO is created.

18.3.2.2. Assets that cannot be repaired due to a zero balance condition for needed bits and pieces will be processed into AWP storage. A firm DUO should be processed for the AWP end item or the bits and pieces as appropriate.

18.3.3. A maintenance TRN transaction will be processed when a repair cycle item is removed from the end-item, repaired and reinstalled without a demand being placed on supply. The repaired asset is not physically processed through base supply, but the repairing work center must give RCSS the information needed to update supply records. Failure to inform RCSS about TRNs will reduce the number of serviceable items base supply can keep on hand.

18.3.3.1. Repair action will be documented on AFTO Form 350 (manual or automated). Part II of the AFTO Form 350 will include the maintenance action taken (code A, F, G, K, L, or Z). The maintenance work center responsible for the repaired item will furnish sufficient data to RCSS so complete records may be maintained on the item.

18.3.3.2. Repair cycle time for TRN actions will begin when repair action is entered into CAMS and stop when the repairing work center completes the last repair work center event (WCE).

18.3.4. When a serviceable asset is received from base supply, the person receiving the asset will annotate the DD Form 1348-1 as required and retain copy two. Copies three and four will be forwarded to RCSS by base supply.

18.3.4.1. The originating work center will enter the unserviceable asset removal in CAMS, send the asset to the appropriate repair shop (TRIC NSR, part removed for in-shop processing), and establish a shop repair matrix (TRIC SMT). The matrix will be used for in-shop scheduling of assets through the repair cycle. A permanent shop matrix for a particular asset may be established for future scheduling of identical WUC assets. The originating work center will ensure a repair priority (**Table 18.1.**) is entered on the AFTO Form 350 prior to processing to the repair work center. Non-DIFM and selected DIFM assets that have the same part number and require the same inspection and/or repair may be processed with a single AFTO Form 350. Use data in part II of AFTO Form 350 for scheduling and routing purposes. Ensure the AFTO Form 350 accompanies the asset.

18.3.4.2. The status and location of repair cycle assets must be updated in CAMS within 30 minutes after physical arrival in the work center. (**NOTE:** The TRIC codes RDP and DFM are two different CAMS screens and must be updated as the assets' status changes.) If CAMS is not available, ensure DIFM status and location updates are called in to the RCSS within the 30-minute criteria.

18.3.4.3. If an asset cannot be repaired, the prime work center will take the necessary disposition actions and cancel the remainder of the shop matrix.

18.3.4.4. After repair action is complete, each work center will update CAMS status and AFTO Form 350 tag data and process the tagged asset to the next destination with any other applicable documentation.

18.3.4.5. On DIFM firm transactions, repair cycle time will begin when all assets required for a specific JCN are issued by supply and continue until the asset is turned in to RCSS.

18.3.4.6. Multiple quantities of assets limited to the same stock number may be block scheduled by a work center under one AFTO Form 350; for example, aircraft batteries and wheel assemblies. Block scheduling is not authorized for assets processed outside the prime repair work center.

18.3.5. A TIN transaction will occur when an unserviceable DIFM asset is repaired or NRTS and returned to supply.

18.3.6. When an asset under DIFM memo control (TEX code 7 memo DUO) is repaired, the asset must be processed through supply in order to clear the memo DUO document number.

18.4. Management of Repairable Assets. The following products will be used to manage assets through the repair cycle:

18.4.1. Repair Cycle Asset Management List (D23). The D23 will be used to track, trace, and monitor DIFM assets. It will be used by both maintenance and supply to ensure DIFM assets are returned to supply, to monitor the asset stock position, and to help maintenance establish the asset repair priority.

18.4.2. Repair Cycle Efficiency Report (J203). The J203 will be used to measure base repair cycle time for IREP analysis and agile logistics.

18.4.3. Core Automated Maintenance System (CAMS). This system is an automated management tool which provides positive control to the RCAMS. The use of CAMS is required, and locally developed manual backup procedures should be developed and implemented to gather data for CAMS input in the event CAMS becomes nonoperational. **NOTE:** Bases where CAMS equipment capability does not exist within maintenance will develop local procedures in an MOI to manage repairable assets through the repair cycle, ensuring the intent of this chapter is maintained.

18.4.4. SBSS/CAMS Interface. The maintenance-supply interface subsystem of CAMS provides the capability to order parts, time change requirements, and TCTOs, and to maintain maintenance event validation of supply requisitions. TRIC MSM allows CAMS to process online maintenance and supply interface programs through a central menu (AFCSM 21-579, Volume 2).

Table 18.1. Maintenance Repair Priority System.

I T E M	A	B
	Repair Priority (note)	Applications
1	(R)02A	Unscheduled maintenance, aircraft on flying schedule (including FCF).
2	(R)02B	Unscheduled maintenance, aircraft capable of flying, not on the flying schedule and not FCF.
3	(R)02C	SE below critical level.
4	(R)02D	Aircraft wheels, batteries, and life support (parachute, lap belts, etc.).
5	(Y)03A	Aircraft scheduled maintenance (PE, phase, ISO) discrepancies that will adversely affect maintenance flow.
6	(Y)03B	Aircraft schedule maintenance (PE, phase, ISO).
7	(Y)03C	Jet engine scheduled maintenance (PE).
8	(Y)03D	SE not below critical level.
9	(B)04A	Critical assets (DIFM).
10	(B)04B	Critical assets (non-DIFM).
11	(B)04C	SE not below critical level.
12	(B)04D	Aircraft hard-broken, long-time fixes, Hangar Queen, hold down.
13	(G)05A	Local manufacture (supply replenishment).
14	(G)05B	Excess to base requirements.

NOTE: Repair priority corresponds with [Table 17.1](#).--(R) priority 02A - 02D, (Y) priority 03A - 03D, (B) priority 04A - 04D, and (G) priority 05A - 05B.

18.5. Movement and Storage of Repairable Assets:

18.5.1. Movement. Maintenance is responsible for the movement of repairable assets through the repair cycle. The repairing work center function will move all assets expeditiously through the repair cycle. Each unit will establish a reasonable time for these assets to move between organizations, incorporating the standards into an MOI or other instruction. Critical assets will be hand-carried throughout the repair cycle, not allowed to sit at designated repair functions awaiting movement. Padded containers and restraining devices will be used for transporting sensitive assets.

18.5.2. Awaiting Maintenance (AWM). Prime work centers will maintain and secure AWM assets and associated hardware within the repair function.

18.5.3. Awaiting Parts (AWP). When bits and pieces are ordered, the work center will update the CAMS status to show repair action is on hold for parts. UJCs AR and BR must be used to order bits and pieces for AWP occurrences to ensure transactions are included on the AWP validation listing (D19). After bits and pieces are issued, the work center will update CAMS with a new estimated completion date and time. If all bits and pieces are not available, the work center will update the applicable CAMS work order. The prime work center will maintain and secure all AWP items and associated bits

and pieces from bench stock or partial issues with the AFTO Form 350 tag, AF Form 2005 for each bit and piece ordered, and a DD Form 1348-1 for each bit and piece received. If AF Form 2005 is not used for ordering bits and pieces, the document number of all backordered bits and pieces required must be recorded in CAMS.

18.5.3.1. Maintenance and supply must monitor AWP assets closely to ensure positive action is taken to return the assets to a serviceable condition. Necessary actions may include ordering the next higher assembly, cross-cannibalization, local purchase, supply difficulty letters, followups, substitutions, and pursuing Gold Way initiatives (Chapter 20 and AETCI 21-111).

18.5.3.2. Removal of serviceable subassemblies or bits and pieces from in-shop reparable assets for use in satisfying immediate or anticipated needs or for consolidating AWP requirements is authorized and encouraged to relieve or prevent MICAP-reportable incidents. The prime work center is responsible for updating the appropriate DUOs. See TO 00-20-2, Section V, when procedures on reporting requirements are required for cannibalization actions.

18.5.3.3. Items cannot be declared NRTS 4 (lack of parts) and returned to depot without the approval of the AFMC item manager. (NRTS codes are identified in TO 00-20-3.) Maintenance will request disposition instruction from supply to return an item to the depot as NRTS 4. When the disposition instructions are furnished, the turn-in documentation will be prepared as follows:

18.5.3.3.1. The prime work center will enter NRTS 4 in CAMS and in block 20 of AFTO Form 350.

18.5.3.3.2. A designated prime work center inspector will sign block 15 of the AFTO Form 350.

18.5.3.3.3. Unused bits and pieces will be turned in to supply or returned to bench stock. If the prime work center determines bits and pieces have no base consumption or demand forecasted, these bits and pieces will be installed in, packaged with, or attached to the item for return to supply. The prime work center may request cancellation through supply for bits and pieces not received or needed.

18.6. Special Handling Requirements:

18.6.1. Scheduling of Assets Requiring Multiple Work center Processing. Each successive repair work center will use the same repair priority initially assigned, but the alpha priority may be changed by the prime work center within the numerical priority. Also, the numerical priority may be changed by the repair work center after originating work center coordination based on repair shop workload and actual mission need ([Table 18.1](#)).

18.6.2. Supply Assets Requiring Functional Checks. Maintenance work centers will identify those items requiring maintenance functional checks or calibration before issue. The RCM function will prepare a list of all items and forward it to base supply. The items identified on the list will normally be issued to maintenance for the necessary serviceability check (activity code C) and then returned to supply pending a demand for the item.

18.6.3. Supply Point and Buildup Items:

18.6.3.1. In coordination with the chief of supply, the group commander may establish supply points within the maintenance complex. Supply point stocks are restricted to selected repair cycle assets peculiar to the maintenance work centers supported.

18.6.3.2. Selected assets may be prepositioned in designated maintenance work centers under the control of the work center RAM. The RCSS will transfer the assets to the work center and process the necessary documentation.

18.6.3.3. The work center will inform the RCSS each time an asset is physically removed from the shop to replace a like item removed from an end item. When the item removed from the end item is restored to a serviceable condition, the owning work center will notify the RCSS, who will process a paperwork TIN for the item to clear the DIFM and update repair cycle data. Components removed from the end item must be turned-in to RCSS when NRTS or condemnation actions occur. Normal DIFM TIN procedures will be used.

18.6.3.4. The RCM function and work center will assist the RCSS with the semiannual supply point reconciliation as required.

18.6.4. Repairable Processing of Classified Assets. Classified repairable assets (TO 00-20-3) will be processed in the same manner as other assets except the originating work center will indicate the item is classified on the front of the AFTO Form 350. Classified component data will not be entered into CAMS. Use a stamp that states "This item is classified (insert classification) and must be handled according to AFI 31-401, *Information Security Program Management*." The work center responsible for the bench check or repair must ensure the security classification of the component is conspicuously visible. The preferred method of marking the classification on components is to stencil with paint or to attach a plate with screws or rivets, depicting the classification.

18.7. Reusable Containers. Do not destroy or discard reusable containers. The maintenance activity will make maximum use of reusable containers, normally keeping them with the asset during repair cycle processing. If the containers cannot be stored with the item due to their size and/or shape, they will be stored in areas accessible to repair work centers.

18.8. Local Manufacture (General Requirements):

18.8.1. Only essential local manufacture not specifically forbidden by directive will be accomplished. Requests in conflict with DoDI 5000.2/AF Sup 1 will be forwarded to the approving authority for action. The group commander will designate (in writing) local manufacture approving authorities.

18.8.2. Local manufacture of nonstandard or locally designated special tools or equipment must be thoroughly reviewed ([Chapter 19](#)). All approved local manufacture requests must have a manufacture priority assigned by the applicable squadron production superintendent, in coordination with the fabrication function superintendent. If any delay arises in the manufacture of approved items, the RCM function will coordinate with supply to resolve any causes for the delay. **NOTE:** Parts coded for local manufacture in aerospace equipment (aircraft, support equipment, test stations, etc.) illustrated parts breakdowns are considered preapproved.

18.9. Local Manufacture Process. Local manufacture by the maintenance work center is a combined effort of the requester, RCSS, RCM function, and major fabricating work center. The requester must provide sufficient information with the local manufacture request to permit review and workload estimation as follows:

18.9.1. The requesting activity will submit requests for local manufacture of field manufactured items, nonfield-coded items, and nonaeronautical items on AF Form 2005. Requests for items with a

recurring requirement will be submitted on AF Form 2005; requests for items with a nonrecurring requirement (for example, made-to-fit assets such as hoses, lines, and panels) will be submitted on AFTO Form 350. When possible, forward a sample with the AFTO Form 350. The equipment account custodian will submit requests for local manufacture of equipment items to the equipment management element of base supply on AF Form 601, **Equipment Action Request**.

18.9.2. Supply will assign a document number to the local manufacture request and forward DD Form 1348-1 (in four parts) to the approval authority for approval or disapproval. (DD Form 1348-1A, may be substituted in all cases.) The DD Form 1348-1 will then be sent to the RCM for processing. (At some locations, the RCM may also be an approval authority.)

18.9.3. When a request is disapproved, the RCM function will annotate the DD Form 1348-1 with the reason for disapproval and return it to the requesting function through base supply. When a request is approved, the RCM function will separate the jobs to be accomplished by contract from those to be accomplished in the maintenance work centers. The work to be done by contract will be sent to base contracting for processing.

18.9.4. After approval, the RCM function will annotate DD Form 1348-1 with status code BB and the estimated date of completion in block DD and the EID number in block V. If the local manufacture request is not in work due to lack of parts, drawings, etc., the status code BD will be used. The RCM function will then send the form to the RCSS.

18.9.5. The RCSS will make a list of material requirements and ensure the necessary blueprints and specifications are available and current. After completion of work planning, the RCM function will authenticate the work orders on DD Form 1348-1 as follows: maintenance repair priority (block AA); original requester's name, shop, and phone number, if known (block BB); estimated date of completion (block DD); signature of the RCM function and date the job is scheduled to begin (block EE); and signature and date of the maintenance approval authority (block FF).

18.9.6. On receipt of all required material and any required samples, the RCSS (or equivalent) will forward the local manufacture work order to the applicable fabricating work center, to include Copy 3 of DD Form 1348-1 and any required drawings and/or samples needed for manufacture. The RCSS will validate the currency of technical drawings, aperture cards, and microfilm before forwarding the work order to the fabricating work center.

18.9.7. The fabricating work center will enter an AFTO Form 350 number into CAMS by entering LCL in the DIFM, TRN designator block.

18.9.8. The RCSS (or materiel control at Kirtland AFB) will ensure a central file is maintained for drawings and materiel specifications. The validation date will be documented on the drawings or a separate paper attachment to the drawing. The validation date should not exceed 6 months before the beginning of manufacture. **NOTE:** The RCM, in coordination with squadron production superintendents, RCSS, and repair work centers will develop local procedures for emergency local manufacture of repair priority 02 ([Table 18.1](#)).

18.10. Work Order Closeout (SBSS). On completion of a local manufacture work order, the major fabricating activity RAM will close out the DD Form 1348-1 by entering the date completed and signing block GG. The activity will:

18.10.1. Update and send DD Form 1348-1 to the RCSS with the item and any drawings or samples. The DD Form 1348-1 must state organization and shop code of the major fabricating activity. Enter

the code Y in column 45, the organization and shop code in columns 46 through 50, and the total cost of direct labor, materiel (provided by supply when necessary), and overhead used to manufacture a single unit in columns 74 through 80 (if the requester is under the maintenance industrial fund concept). If the requester is under the O&M concept, enter only the total cost of materiel used.

18.10.2. Close the work order in CAMS. The manufactured item may be sent directly to the requester or to RCSS if a current demand for the item does not exist; for example, bulk-produced flight control cables.

18.11. One-Time Exceptions. The production superintendent, fabrication superintendent, or designated approval authority may authorize specific exceptions to local manufacture requests and work order processing procedures to fulfill one-time urgent requirements for field management or nonfield management-coded expendable items. The local manufacture will be accomplished after approval, but the documentation may be processed after the fact to the supply activity. If this occurs, the supply activity will be given the appropriate requisition forms with the additional information normally furnished when routine local manufacturers' work orders are processed.

Chapter 19

TOOL MANAGEMENT PROGRAM

19.1. Objectives and Overview:

19.1.1. The tool management program encompasses all facets of tool accountability, control, and storage procedures for common and special tools. It also encompasses support and test equipment.

19.1.2. The objectives of the tool management program are to prevent and eliminate FOD to aircraft, engines, training and support equipment and to reduce costs through strict effective control and accountability of assets.

19.1.3. This chapter cannot cover every possible scenario encountered in AETC organizations. Therefore, in areas or situations not specifically covered by this chapter, units should employ good judgment and common sense to ensure the intent of the program is met.

19.1.4. Each group commander (or equivalent) has overall responsibility for the tool management program. The commander will develop an MOI to implement the program at unit level. (**NOTE:** C-12 and C-21 maintenance contractors will follow the tool management program established by their contract.) As a minimum, the MOI will address and/or identify procedures for:

19.1.4.1. Warranted tool management.

19.1.4.2. Strict control and management of replacement and consumable tools and other consumable items contained in CTKs.

19.1.4.3. Transfer of CTKs at the job site (onsite transfers).

19.1.4.4. Lost tools.

19.1.4.5. Assignment of CTK and equipment identification designators.

19.1.4.6. Assignment of standard color codes (if applicable) or other methods used to identify tools removed from CTKs.

19.1.4.7. Control of personal protective equipment (for example, ear protectors, etc.).

19.1.4.8. Control of small tools or items that cannot be marked (for example, drill bits, Allen wrenches, apexes).

19.1.4.9. Ensuring positive control of rags and other expendable items as necessary, especially in on-equipment maintenance and JEM areas.

19.1.4.10. Managing locally manufactured, modified, or developed tools and equipment (paragraph 19.9.).

19.2. Specific Terms:

19.2.1. Composite Tool Kit (CTK). A controlled area or container assembled as a kit and used to store tools or equipment and maintain order, positive control, and ease of inventory. CTKs may be tool boxes, shadow boards, shelves, systems of drawers (for example, Stanley Vidmar, Lista), cabinets, or other similar areas or containers. Multiple cabinets may be identified as one CTK. **NOTE:** Shelves, drawers, and cabinets used to store individual issue tools, special tools, and equipment do not have to

be designated as CTKs if the items and their locations are marked and identified according to paragraphs 19.3.4. and 19.3.

19.2.2. Tool Storage Facility. An area within a work center designated for storage and issuance of tools and equipment.

19.2.3. Individual Issue Tools and/or Equipment. Tools or equipment issued for use as an individual item.

19.2.4. Special Tools. Tools designed and developed to perform a particular maintenance operation on an end item, piece of equipment, or component. Examples include wheel or bearing pullers, special jigs, special cradles, bolt cutters, alignment devices, and those listed in applicable equipment TOs.

19.3. General Program Management. Squadron programs are the overall responsibility of squadron maintenance officers and superintendents (or equivalents). Each flight commander and/or flight chief (or equivalent) will establish a tool management program and appoint a CTK custodian to manage the program within the respective work center. The following are minimum requirements:

19.3.1. Each flight commander and flight chief (or equivalent) will determine the type, size, and number of CTKs required for their work centers.

19.3.2. A master contents listing will be developed for each CTK or equipment item kit (such as test equipment with cables). As a minimum, the listing will contain a description of each tool or equipment item contained in the kit and the quantity of each item. Manufacturer inventories on equipment items may be used if they are complete.

19.3.3. Each tool, item of equipment, or consumable contained in a CTK will have an assigned location identified either by inlay cuts in the shape of the item, shadowed layout, label, or silhouette. No more than one item will be stored in a cutout, shadow, or silhouette (except tools issued in sets such as drill bits, Allen wrenches, or apexes). Store these types of tools in the container they were issued in or a similar one that facilitates easy identification of removed or missing tools. **NOTE:** These requirements do not apply to equipment stored in the original manufacturer's containers.

19.3.4. Shelves, drawers, cabinets, etc., used to store individual issue tools, special tools, and equipment or other items available for issue must have item locations marked and identified (label, shadow, silhouette, etc.). The purpose of marking these locations is to facilitate end-of-shift visual inventory of the tool storage facility (paragraph 19.5.5.).

19.3.5. Test equipment and accessories that do not present a FOD potential and are not dispatched from a work center need not be controlled as a CTK. Designated locations will be established for test equipment and common accessories (such as waveguides, attenuators, fittings, cables, adapters) not controlled in CTKs.

19.3.6. Personally owned tools are not authorized for use.

19.3.7. Consumables may be included in CTKs. If so, they will be identified on the contents listing. Examples of consumables are safety wire, adhesive, wire bundle lacing, and solder. Do not include common hardware items such as bolts, nuts, and/or screws. **NOTE:** This does not prohibit the use of common hardware required for use as tools. Common hardware required for use as tools may be included in CTKs if they are listed on the master contents listing and meet all the requirements of this chapter.

19.3.8. Electric motor-driven tools (including drills, sanders, and screwdrivers) are not used on or in the immediate vicinity of aircraft. Nonmotor-driven electric tools such as soldering irons are authorized for use on aircraft. The following exemptions apply:

19.3.8.1. Underwriters laboratory (UL)-approved vacuum cleaners may be used in and around aircraft if they are maintained and controlled as items of CTK equipment and are not used in areas prone to flammable or gaseous mixtures.

19.3.8.2. Battery-powered screwdrivers and drills may be used to remove and replace fasteners attaching panels to aircraft structures with the following restrictions:

19.3.8.2.1. These tools will not be used to install fasteners that require a torque value unless the tool is equipped with an approved torque-sensing device calibrated by PMEL.

19.3.8.2.2. These tools will not be used in class 1, division 1, hazardous areas. These tools will not be used to install or remove fasteners from fuel tanks, fuel cell cavities, or nacelles. They will not be used within a 1-foot radius of fuel vents extending upward from the floor to a level of 5 feet above the fuel vent. They will not be used within 18 inches of the floor and will not be used when there is a known or suspected fuel leak or spill. Tool battery exchanges and recharges will not be conducted in class 1, division 1 or 2, hazardous areas.

19.3.8.3. Air-powered tools may be used on aircraft; however, air-powered drills with apexes will not be used for aircraft panel installations unless equipped with a torque-sensing device calibrated by PMEL.

19.3.9. Tools that have been misused, lost, damaged, or destroyed will be processed according to AFMAN 23-110, Volume 2.

19.4. Marking and Identifying Tools and Equipment:

19.4.1. CTKs, tools, and equipment items will be assigned an individual designator. (For equipment items, the serial number may be used.) The tools or equipment contained in a CTK or equipment kit (such as a test equipment kit) will be etched, stamped, or marked with the assigned CTK or equipment designator. All other tools and equipment items, to include individual issue tools, special tools, and test equipment must be assigned and etched, stamped, or marked with a designator. Chits or other types of markers that may have FOD potential will not be used to mark tools and equipment. Small tools or items that cannot be marked (drill bits, Allen wrenches, apexes, etc.) will be maintained in a container marked with the assigned designator and quantity of tools or items contained therein.

19.4.2. Hand grease guns (and tips if removable), dispensing cans, spray bottles, pump oilers, and similar containers must be marked with the type of grease, fluid, or other liquids contained in the dispenser. In addition, they must also be etched, stamped, or otherwise permanently marked with the applicable CTK designator and military performance specification (MILSPEC) of the contents (or manufacturer's part number, if there is no MILSPEC). **NOTE:** If containers are used to apply substances classified as hazardous materials, labeling requirements of AFOSH Std 161-21 and local directives must be accomplished.

19.5. Tool Accountability, Control, and Inventory:

19.5.1. CTK custodians are responsible for tool and equipment accountability and control within their respective tool storage facility.

19.5.2. The system used to control and account for tools and equipment may be chits; an AETC Form 1042, **CTK Tool Checklist**; an AF Form 1297, **Temporary Issue Receipt**; automated tool control systems (includes bar code readers); a locally approved form; or another system. Regardless of the system used, *the CTK custodian must be able to determine at all times what tools and equipment are checked out and by whom*. Furthermore, a visual inventory will be conducted of the contents of all CTKs when tools or equipment are issued for use, at the completion of each job or task, and when tools or equipment are returned to the tool storage facility. **NOTE:** When CTKs are returned, a visual inventory will be completed by a person assigned to the tool storage facility (or an individual designated as CTK monitor per paragraph 19.5.3.).

19.5.3. In small work centers, it may be impractical to designate a full-time CTK custodian. Work centers fitting this criteria usually have a small quantity of personnel assigned and may share the same CTK to perform their maintenance tasks. There may also be work centers where the only tool management functions being performed are issuing, inventorying, and securing CTKs and equipment. In work centers such as these, the work center supervisor may designate (in writing) a member of the maintenance team to be a CTK monitor. The CTK monitor will ensure CTKs, tools, and equipment are properly controlled, inventoried, and secured.

19.5.4. If chits are used, they will be controlled as tools and inventoried at the beginning and end of each shift. Chits will not be issued directly to individuals or removed from the tool storage facility unless they are part of a CTK.

19.5.5. All CTKs, individual issue tools, and equipment will be accounted for at the beginning and end of each shift.

19.5.6. If tools are issued for use in a pouch, lineman's kit, or similar kits or containers that prohibit silhouetting and/or shadowing, AETC Form 1042 or a locally approved form or product will be used to facilitate inventory control. Include the CTK number of the pouch or kit and the quantity, nomenclature, and CTK number (if different) of each tool included in the kit. The form will be completed at the time of issuance and remain in the CTK storage facility. When the tools are returned, the form will be used to inventory and reconcile. These procedures do not take the place of the requirement for inventories to be completed by the user at the completion of each task. **NOTE:** Units may elect to mark (with permanent marker, stamps, etc.) the exterior of a pouch with an inventory of the items contained in order to facilitate user inventories at the end of each task.

19.5.7. AETC Form 1042 or a locally approved form or product will be used to identify tools or other items removed from a CTK, including the CTK number, nomenclature of the item, date removed, the reason removed, and initials (or employee number) of the individual making the entry. Units may elect to use a single form or product with a record of all items removed from all CTKs assigned to the tool storage facility, or they may assign an individual form to each CTK. Regardless of the method used, the form or product will be maintained in the tool storage facility to ensure a permanent record of tools removed from CTKs.

19.5.8. At least annually or when the CTK custodian changes, a comprehensive inventory will be performed of each CTK. The purpose of this inventory is to perform an extensive inspection of all tools and equipment contained in the CTK, to include condition, identification markings, and accuracy of the CTK contents listing. This inventory will be documented on a locally approved form or in a memorandum, and the flight commander and flight chief (or equivalent) of the work center will be provided with a copy. CTK custodians will maintain copies of the most current inventory on file.

19.6. Uses for AETC Form 1042. AETC Form 1042 is a multipurpose form designed to facilitate a number of tool and equipment management functions. Some examples of how this form may be used are as follows:

19.6.1. The front side of AETC Form 1042 may be used to provide a record of tools removed from a CTK. In this case, fill in the CTK number of the kit to which the tools are assigned, nomenclature, quantity removed, reason removed, and initials (or employee number) of individual removing the tool. When a tool has been replaced, simply annotate the date replaced.

19.6.2. The front side of AETC Form 1042 may also be used to facilitate inventory control of tools issued for use in a pouch, lineman's kit, or a similar kit that prevents silhouetting and/or shadowing. When the form is used for this purpose, identify the CTK number of the pouch or similar container in the upper left-hand corner, the quantity placed in the kit, and (if different) the CTK number of the tool being placed in the kit. The kit may then be issued out and returned, using the reverse side of the form.

19.6.3. The reverse side of AETC Form 1042 may be used to issue CTKs, tools, or equipment. When used for this purpose, the form is self-explanatory.

19.7. CTK Security. CTKs and equipment will be stored in secure areas when not in use. The area used will prohibit access by unauthorized personnel and be locked when unattended. Access to stored tools and equipment not in use will be limited to CTK custodians and/or designated monitors.

19.7.1. Individual CTKs must have locks that prevent unauthorized removal of tools or equipment. The locks and keys on the CTK contents listing. Locks are not required for individual issue tools or equipment located in secure tool storage facilities.

19.7.2. CTKs must be locked when unattended. Mobile CTKs in use in open areas where they may roll and damage aircraft or equipment, such as the flight line, are locked and secured (cables, locking wheels, etc.) when left unattended.

19.8. Procedures for Lost or Missing Tools. In accordance with AFI 21-101, the following action will be taken:

19.8.1. Supervisors will ensure all personnel are familiar with lost tool procedures.

19.8.2. Any time a tool or item cannot be found after work is performed on or around aircraft, support equipment, or flight line vehicles, a Red-X will be placed in the aircraft AFTO Form 781A or AFTO Form 244 equipment forms and a narrative entry will be made, describing the tool or item lost and the last known location.

19.8.3. The production superintendent will be notified immediately upon discovery of a lost or missing tool. He or she will ensure the flight chief, flight commander, squadron maintenance officer, and superintendent (or equivalents) are notified as well as the MOC.

19.8.4. Even if the item is found, an AETC Form 138, **Lost Tool/Chit Investigation Record**, will be initiated to document and verify actions pertaining to the investigation of the lost tool or chit. The completed form will be routed through the squadron maintenance officer to the quality assurance office for review and filing.

19.8.5. If the item is not found, the SMO or MS (or civilian equivalent) will direct actions to conclude the search and clear the AFTO Form 781A or AFTO Form 244 entry.

19.9. Locally Manufactured, Modified, or Developed Tools and Equipment. All organizations will develop a process to ensure QA reviews and approves locally manufactured, modified, or developed tools and equipment that will carry loads (such as lifting devices or hoists), change torque values, and/or present the potential to damage government resources.

19.9.1. Flight chiefs (or civilian equivalents) will determine which tools meet this criteria and will request QA approval. QA will determine the criteria and procedures for formally approving and documenting items in this category.

19.9.2. All other items only require flight chief (or civilian equivalent) review and approval. Flight chiefs (or civilian equivalents) will establish procedures for documenting review and approval of these items.

19.9.3. Tools and equipment identified and approved for construction or modification in a TO or Air Force publication do not require QA approval.

19.9.4. Unserviceable parts used for the purpose of testing, or as a tool, must be marked as unserviceable.

19.9.5. Contract organizations will provide an informational copy of all approved items to the QAE office.

Chapter 20

PRODUCT IMPROVEMENT PROGRAM (PIP)

20.1. Objective. The objective of the PIP is to support Air Force R&M initiatives and improve the cost effectiveness, readiness, and safety of products in the Air Force operational inventory (AFI 21-118, *Improving Aerospace Equipment Reliability and Maintainability*). This will be done by:

- 20.1.1. Improving levels of reliability and effectiveness of the product and the manufacturing, repair, and operational support process.
- 20.1.2. Using feedback information to identify and correct design deficiencies and to improve acquisition, maintenance, and operating policy.
- 20.1.3. Analyzing systems with marginal or unsatisfactory performance to determine specific causes and areas requiring improvement.
- 20.1.4. Establishing deficiency reporting priorities and identifying possible corrective action alternatives.
- 20.1.5. Using the results of improvement efforts in the development of new systems, subsystems, and equipment to keep deficiencies from recurring.
- 20.1.6. Consolidating the processes used to maximize local repair capability, procurement of repair services, and acquisition of reparable or expendable items to facilitate base-level repair.

20.2. LG Commander Responsibilities. The LG commander has the overall management responsibility for the PIP. He or she will appoint a product improvement manager (PIM).

20.3. PIM Responsibilities. The PIM will be familiar with Air Force R&M initiatives and the interrelated programs within the PIP ([Table 20.1](#)). PIM responsibilities include, but are not limited to:

- 20.3.1. Managing, emphasizing, and promoting the various online product improvement and reliability and maintainability programs. Circulating flyers, visiting commanders calls, presenting maintenance orientation briefings, and making routine visits to the maintenance areas.
- 20.3.2. Developing an MOI or wing instruction outlining specific PIP wing or unit responsibilities and procedures.
- 20.3.3. Ensuring standardized PIP training is provided to all newly assigned personnel.
- 20.3.4. Performing deficiency assessments. Assessing unit R&M concerns is twofold. First, review all unit reported R&M deficiencies and determine those caused by unit factors and local conditions versus those beyond the unit's control. Second, review available maintenance and supply trends and high man-hour consuming repairs. (Analysis and base supply can provide the majority of this information.)
- 20.3.5. Managing the Gold Way Program (AFI 21-123, *Air Force Gold Program*, and AETCI 21-111).
- 20.3.6. Managing the deficiency reporting system (TO 00-35D-54).
- 20.3.7. Managing the TO improvement program (TO 00-5-1).

20.3.8. Managing the equipment warranty program (TOs 00-35D-54 and 00-20-3).

20.3.9. Managing the modification proposal program. A modification proposal is a recommendation to change the operation, use, or appearance of Air Force equipment. Submit modification proposals to HQ AETC/LGMMQ on AF Form 1067, **Modification Proposal**, according to AFI 63-1101. Maintain a modification proposal file to include all submitted AF Forms 1067 and a copy of the applicable lead command's configuration control board meeting minutes.

20.3.10. Screening maintenance-related suggestions.

20.3.11. Managing the source, maintenance, and recoverability code change request program (TO 00-25-195).

20.3.12. Developing a consolidated LG/OG report of potential product improvement working group (PIWG) issues to the OG QA (AFI 21-118).

20.3.13. Managing the productivity, reliability, availability, and maintainability program, using the project manager's guide available at: <http://www.asc.wpafb.af.mil/asc/sma/pram/pramindex.htm>.

20.3.14. Monitoring and tracking the innovative development through employee awareness (IDEA) program submittals (AFI 38-401, *The Air Force Innovative Development Through Employee Awareness [IDEA] Program*).

20.4. Gold Way. The purpose of Gold Way is to optimize AETC mission capability and reduce material costs using local repair on acquisition processes. AFI 21-123 and AETCI 21-111 establish policy and procedures for repair and acquisition initiatives for aircraft, communication-electronics (C-E) systems, training devices, and support equipment.

20.5. Deficiency Reporting. The PIM will screen, process, and control deficiency reports and exhibits (TO 00-35D-54). Specifically, the PIM will:

20.5.1. Ensure reporting of major or critical discrepancies discovered during acceptance and transfer inspections (**Chapter 4**) for initially procured aircraft, engines, or aircraft and engines received from depot maintenance facilities (whether contract or organic) and contract field teams. Include the government contract QAE function of the contract maintenance organization that performed the maintenance as an information addressee on the deficiency report. Additional acceptance inspection deficiency reporting is warranted if, after the initial acceptance inspection is accomplished (for example, the next PE inspection), reportable defects are discovered that are directly attributable to contractor-provided maintenance.

Table 20.1. Applications and Product Improvement Directives.

I T E M	A	B
	Application	Directive
1	IDEA Program; IPDS database	AFI 38-401, TO 00-5-1 (and AETC Sup 1), and TO 00-25-195 (and AETC Sup 1)
2	AF Form 1067	AFI 63-1101
3	AFTO Form 22	TO 00-5-1 (and AETC Sup 1)
4	AFTO Form 135	TO 00-25-195 (and AETC Sup 1)
5	Deficiency Reporting	TO 00-35D-54
6	Equipment Warranty	TO 00-20-3 and TO 00-35D-54
7	IREP	AETCI 21-101
8	PIWG Agenda Items/Product Improvement	AFI 21-118
9	Gold Way	AETCI 21-111 and AFI 21-123
10	Value Engineering	AFI 63-801, <i>Value Engineering Program</i>

20.5.2. Keep the necessary data required for materiel and publication deficiency studies, distribute corrective action information, and inform the commander of deficiency reports submitted on assigned equipment. Maintain a file on all deficiencies reported by the unit. Track deficiencies not meeting submission criteria locally for possible submission to an applicable PIWG.

20.5.3. Emphasize the deficiency reporting program and ensure maintenance personnel are familiar with it. This system and the day-to-day maintenance data reporting provide an effective method of improving the R&M of equipment. Deficiencies (including detailed information) must be promptly reported to the PIM. The PIM will then ensure the deficiency is adequately defined, meets the criteria of TO 00-35D-54, and is investigated and processed when necessary. The PIM will coordinate with other activities (such as data management) for supporting data and prepare the deficiency report for submission. Deficiency reports returned with an unsatisfactory answer must be critically reviewed and resubmitted with additional information, if applicable.

20.5.4. Ensure compliance of deficiency exhibit, issue, TIN, and storage procedures as prescribed in AFMAN 23-110, Volume 2, and TOs 00-20-3 and 00-35D-54. Deficiency exhibits will be turned-in with an AFTO Form 350, and a replacement item will be requested from supply.

20.6. Equipment Warranty Program. Special procedures for handling equipment warranty items are in the applicable equipment TOs and/or TOs 00-35D-54 and 00-20-3.

20.7. Monitoring the Configuration Management Process. Configuration management includes submitting modification proposals, tracking unit concerns being worked by MAJCOM and lateral commands, and ensuring proper implementation of modification directives or TCTOs. A modification proposal is a recommendation to change the operation, use, or appearance of Air Force equipment. The modification proposal will be submitted as prescribed in paragraph **20.3.9**.

20.8. Product Improvement Working Groups (PIWG). The LG and OG QAs are an integral part of the information gathering and educational process of PIWGs. The PIM will pass on all deficiencies that do not meet the criteria for submission under any other category within the PIP to the LG QA for possible inclusion as a PIWG agenda item. The LG QA will:

20.8.1. Maintain a PIWG file to include a locally devised logbook, ledger, or computer program for recording agenda items, meeting minutes, PIWG agenda input reports, and MAJCOM correspondence.

20.8.2. Develop a PIWG input report for each system (such as AGE, PMEL, avionics, engines, commodities) and the primary weapon system that has an established PIWG.

20.8.3. Conduct unit-level PIWG meetings with supervisors and technicians when these meetings are determined to be beneficial for ensuring quality inputs to PIWGs or when ideas are solicited to enhance product improvement. (The PIM will chair these meetings, prepare an agenda, keep meeting minutes, and forward a copy of the minutes to appropriate unit agencies and HQ AETC/LGM within 30 days of the meeting.)

20.8.4. Forward selected agenda items to HQ AETC/LGM on request.

20.8.5. List items that require out-of-cycle input to HQ AETC/LGM. Submitted agenda items must include item nomenclature, WUC, part number, NSN, defect or improvement statement, reason for submission (including number of failures, man-hours consumed, and estimated costs to repair or the cost, if left uncorrected) and recommended actions.

20.9. Value Engineering Program (*Contract Operations Only*). This program is an incentive plan which encourages civilian maintenance contractors to develop and engineer new and innovative ways to save money. By submitting cost reduction methods to the government under the value engineering plan, contractors can help the government cut costs and, at the same time, share in the savings. Submission criteria and procedures for value engineering change proposals are addressed in AFI 63-801 and maintenance contracts.

Chapter 21

INTERMEDIATE REPAIR ENHANCEMENT PROGRAM (IREP)

21.1. Purpose of the IREP. The IREP provides senior leadership a forum to evaluate aircraft, engines, training equipment, C-E equipment, and support equipment repair cost; to highlight specific repair problems; and to improve the efficiency of the repair cycle process. The IREP does not apply to CLS assets or systems.

21.2. IREP Objective. The IREP's objective is to maximize aircraft and equipment availability while decreasing asset repair time and cost. Specifically the IREP focuses on:

21.2.1. Maximizing existing unit level repair capability by obtaining repair authorization or technical data for aircraft, engine, training device, CE, and support equipment parts or components (when practical and economical).

21.2.2. Improving mission capability by maximizing repair cycle efficiency.

21.2.3. Reducing handling and transportation time.

21.2.4. Repairing or reconditioning expendables where cost effective.

21.2.5. Exploring better, simpler, and economical repair procedures.

21.2.6. Encouraging, supporting, and monitoring recommendations to change existing repair authorizations and repair procedures.

21.3. IREP Meeting:

21.3.1. Each flying wing and/or training wing (except Lackland) will conduct an IREP meeting at least quarterly. Communications squadron participation and frequency will be determined by the IREP chairperson. The vice wing commander (or designated representative) is responsible for the success of IREP and will chair the meeting to ensure the IREP meets local needs. (The meeting may be combined with other meetings covering similar material.)

21.3.2. Attendees should include the LG commander, OG commander or DOGM, chief of supply, squadron maintenance officers and superintendents, contractor MA, LG and OG QA NCOICs, supply operations supervisor, supply mission support supervisor, RCM (by activity), maintenance supervisors, PIM, Gold Way manager, RAMs, and others as determined locally. **NOTE:** At bases with both a flying and a training wing, it may be a combined meeting or a single chairperson may be selected.

21.3.3. The chairperson will appoint a single RCM as the wing or base focal point for IREP meeting preparations. This RCM, in coordination with the chairperson, will select inputs, prepare the agenda, and notify attendees of the meeting's location, date, and time. The RCM will prepare, consolidate, and distribute meeting minutes, and the chairperson will sign the agenda and minutes.

21.3.4. The chairperson will ensure problems are identified and management actions are taken to solve problems, and specific persons should be tasked to accomplish or monitor the actions. RAMS and OPRs will brief IREP agenda items assigned by the chairperson. Visual aids will be used to highlight discussion items. As a minimum, the following topics will be on the agenda:

21.3.4.1. A review of overall repair cycle statistics and trends to include the monthly percent of base repair rate per weapon system or equipment category; for example, C-E equipment, training devices, or aerospace ground equipment. Pay particular attention to those assets with the greatest impact on direct mission capability and support.

21.3.4.2. NSNs and NRTS 2, 3, 4, 5, 6, 7, and 8 actions.

21.3.4.3. NSN per weapon system and/or equipment category, top five material support division (MSD) cost assets and five oldest requisitions. The 2LM assets may be excluded. Focus first on assets that are limiting mission capability; then focus on those that drive cost. Units with six or less of a particular weapon system may consolidate NRTS 1 and 9 actions. **NOTE:** Good candidates for review are assets that lead command repair cycle analysis listings (J-21, J-203, and AMCL 91 reports, as applicable), show as being repaired by other units, or show a higher percent of base repair.

21.3.4.4. NSNs of previously established bench stock items that have accumulated MICAP hours.

21.3.4.5. The top five cannibalization items in the weapon system and/or equipment category. Units with six or less of a particular weapon system may consolidate cannibalization items.

21.3.4.6. Top five NSNs with over 30 days AWP time.

21.3.4.7. Repair cycle bottlenecks; for example, repair cycle time, reusable containers, and return to service times (D31 and M32 reports).

21.3.4.8. Cost per flying hour drivers; for example, cost of assets in the repair cycle or float, top five AWP items, and shop CND rate.

21.3.4.9. Agile logistics metrics; for example, MICAP hours, pipeline performance, and issue effectiveness.

21.3.4.10. Periodical review of action-taken codes to ensure they are correct for the actual action accomplished (Q04 report).

21.3.4.11. Review of Gold Way initiatives; for example, local procurement, local repair investigations, status of AFTO Form 22 (repair related) and 135 submissions, and repair fair, job fair, and fast fix action items.

21.3.4.12. Success stories; for example, approved initiatives, Gold Way cross-tell, cost avoidance issues, and process improvements.

21.3.5. The RCM will:

21.3.5.1. Initiate AETC Form 229, **Intermediate Repair Enhancement Program (IREP) Asset Profile**, for each asset selected by the RCM for review at the IREP, forwarding the form to the responsible RAM for completion.

21.3.5.2. On return of the AETC Form 229, coordinate as necessary with other RAMs having collateral repair responsibility for the selected asset or item.

21.3.5.3. Review the AETC Form 229 for completeness and ensure the form and asset are included in the IREP meeting agenda.

21.3.5.4. Maintain a file of AETC Forms 229 and other related correspondence as needed. **NOTE:** The RCM will prioritize selected assets based on mission need and cost. The number of

selected assets to be discussed at the meeting should be limited to allow sufficient time for adequate review.

21.3.6. The RAM will complete AETC Forms 229 and return or forward them to the RCM. In addition, the RAM will identify additional assets or items requiring IREP review to the RCM.

Chapter 22

AETC COMBAT SORTIE GENERATION PROGRAM

22.1. Program Goal. The overall goal of the combat sortie generation program is to develop, refine, and exercise procedures to rapidly turn combat aircraft and aircrews to provide commanders with a sufficient number of combat sorties to satisfy combat taskings. This chapter establishes logistics and operations guidance for the planning, execution, and support of combat turnaround (CT) and integrated combat turnaround (ICT) operations during combat and/or contingency operations. It also defines AETC requirements for combat training exercises. Provisions of this chapter are applicable to AETC fighter units with wartime and/or contingency taskings, and the requirements are in addition to those contained in AFI 21-101. (Conflicts between this AETC instruction and other directives should be identified to HQ AETC/LGMMP.)

22.2. General Procedures:

22.2.1. Qualified maintenance personnel will develop and maintain a quick-fix capability to accomplish on-the-spot flight line repairs of support and armament suspension equipment.

22.2.2. The regeneration flow of aircraft begins when the aircrew reports aircraft status (prior to landing, if possible).

22.2.3. Returning aircraft will taxi to a cursory check area (when used) to confirm status. The cursory check will be accomplished with the engines running. On completion, the aircraft will be directed to the hot pits, ICT spot, or appropriate recovery location.

22.2.4. Mission capable (MC) aircraft selected to fly another sortie during the same flying period will be turned by using applicable combat turnaround operations (CTO) procedures. Because ICT, bomber combat turnaround (BCT), and dual load operations (DLO) are inherently more hazardous and require more personnel than other aircraft turnaround procedures, they should only be used when essential to meet the demands of high sortie rates requiring munitions loading and not daily flying or sortie surge.

22.2.5. Aircraft may taxi to the hot pit refueling area prior to returning to the aircraft parking ramp or ICT spot.

22.2.6. With the exception of hanging external fuel tanks on fighter aircraft, no maintenance, inspections, or configuration changes other than those specified in the applicable -4 checklist (CL) will be performed on ICT, DLO, or BCT aircraft without systems safety engineering analysis (SSEA), MAJCOM, and USAF/ILMW approval.

22.2.7. An aircraft turn supervisor (ATS) will be on location at each designated ICT or BCT aircraft parking spot or location to supervise the entire operation from start to finish. The ATS is a "safety monitor" and will only supervise one operation at a time using the applicable -4 CL.

22.2.8. The ICT time standard for A-10, F-16, and F-15C/D aircraft is 45 minutes. The time standard for the F-15E is 60 minutes. **NOTE:** With the OG Commander's approval, WS may increase the time standard as necessary to account for munitions assembly, hanging external fuel tanks, or uncommon munitions configurations providing the time standard does not exceed 60 minutes for F-16, A-10 and F-15C/D and 75 min for F-15E aircraft. Units with bomber and special mission aircraft that perform DLOs or ICTs will use locally developed time standards.

22.2.9. ICT timing begins when the aircraft is first chocked on the ICT spot or combat turn area (CTA) and ends at the completion of the final aircraft preparation procedures of the applicable aircraft TO or CL.

22.3. Responsibilities:

22.3.1. HQ AETC/DO will coordinate combat sortie generation requirements with gaining MAJCOMs.

22.3.2. HQ AETC/LG will coordinate and approve or disapprove waivers to this instruction. **NOTE:** Units seeking waivers should use AETC Form 1236 as described in [Chapter 4](#).

22.3.3. The 19 AF/DO will monitor wing surge activities and assist in obtaining dedicated airspace and ranges as requested by the unit.

22.3.4. Each wing commander will:

22.3.4.1. Develop the capability to perform the employment operations that would be required at the primary wartime employment base for which the unit is tasked.

22.3.4.2. Publish an operating instruction to provide guidance for conducting, training, and management the wing combat sortie generation program.

22.3.4.3. Ensure the unit is trained in combat sortie generation procedures to be used at the employment base.

22.3.4.4. Initiate combat employment exercises.

22.3.4.5. Provide trained augmentation manpower from base support agencies during combat exercise operations.

22.3.5. Each OG commander will:

22.3.5.1. Develop a detailed plan to qualify ICT teams within 30 days after notification of potential contingency operations. The plan must ensure teams will be provided sufficient training to ensure proficiency prior to deployment. As a minimum, plan to qualify all primary and alternate load crews and a sufficient number of nonload crew ICT team members (as determined by the wing weapons manager) identified on mobility listings. Include this plan in the wing operating instruction for combat sortie generation.

22.3.5.2. Establish procedures to meet briefing and debriefing requirements for aircrew, flight, intelligence, and weather during combat employment operations and exercises.

22.3.5.3. Provide for the selection and training of operations liaison officers, as required, and augmentees to free aircrews from nonflying-related duties.

22.3.5.4. Establish operations procedures for spare aircraft utilization, mission changes, launch control, and aircraft status reporting.

22.3.5.5. Develop procedures to maximize aircrew training during combat surge exercises.

22.3.5.6. Ensure exercise requirements are considered and included in flying hour allocations.

22.3.5.7. In coordination with the LG commander, establish ground operation procedures (for example, aircraft decontamination), aircraft cocking and scrambling procedures, and appropriate

procedures for aircrew participation in various combat sortie generation methods (for example, ICTs).

22.3.5.8. Ensure squadron commanders provide personnel and resources necessary to fully support the wing ICT training program. This includes full support of the minimum crews required to maintain ICT qualification at all times (loading standardization and squadron lead crews).

22.3.5.9. Ensure maintenance personnel are trained in applicable CT and/or ICT operations required for anticipated combat and/or contingency taskings.

22.3.5.10. Establish procedures to meet aircraft maintenance requirements for combat and/or contingency operations.

22.3.5.11. As necessary, designate CTA, maintenance areas, decontamination areas, hot brake area, and arm and de-arm areas.

22.3.5.12. Establish indirect support procedures to provide necessary food services, sanitation, and medical services to personnel involved in CT and/or ICT operations.

22.3.6. Each LG commander will:

22.3.6.1. Establish procedures to meet aircraft maintenance requirements for combat and/or contingency operations.

22.3.6.2. Ensure maintenance personnel are trained in CT and/or ICT operations as required for anticipated combat and/or contingency operations.

22.3.6.3. Provide personnel and resources necessary to support the wing ICT training program.

22.3.6.4. Establish transportation and supply procedures to support unit requirements for combat operations, to include personnel, equipment, and vehicles.

22.3.6.5. Implement supply procedures for accountability and control of spares provided to support maintenance activities during combat and/or contingency operations.

22.3.6.6. Coordinate with the OG commander for refueling procedures that meet the employment training base requirements.

22.4. Key Personnel:

22.4.1. Combat Turn Director (CTD):

22.4.1.1. CTDs are designated and qualified maintenance officers or senior NCOs with a maintenance-related AFSC. The CTD has overall responsibility for all maintenance personnel and resources dedicated to a CTA and complete authority to establish priorities and expend resources to ensure maximum sortie production. In addition, the CTD has the authority to request assistance in resolving problems beyond the capability of assets dedicated to the CTA.

22.4.1.2. In conjunction with the operations liaison officer (OLO) (if used), the CTD will determine if aircraft are capable of meeting mission requirements and weigh all decisions against the priority of the missions being generated (for example, whether to continue or terminate operations in the face of hazards or safety risks).

22.4.2. Aircraft Turn Supervisor (ATS):

22.4.2.1. ATs are highly trained and qualified 7-skill level (minimum) maintenance NCOs responsible for supervising ICT or BCT operations. ATs will only supervise one ICT at a time.

22.4.2.2. ATs will perform the following duties: supervise ICTs by using the appropriate -4 CL technical data; ensure the ICT or BCT progresses safely and on schedule; terminate actions when hazards jeopardize the safety of personnel or equipment; maintain communication with the CTD, appropriate flight line supervisor, and MOC; ensure sufficient serviceable material and equipment are available and properly positioned for the ICT or BCT; and coordinate with the CTD for POL, equipment support or replacement, and the movement of munitions or fuel tanks into the CTA.

22.4.3. Operations Liaison Officer (OLO). The OLO will advise the CTD on aircraft capability to perform missions and advise the CTD on all NMC aircraft. Additionally, the OLO will help resolve aircrew problems, fragmentary order requirements, and operations functions.

22.4.4. Aircraft Battle Damage Repair (ABDR) Assessor. The ABDR assessor is designated maintenance person whose primary wartime task is to evaluate the extent of aircraft battle damage, determine feasibility for repair, estimate repair times, and specify the repairs accomplished and/or deferred for returning the aircraft to MC condition. During contingencies, this person is normally assigned from the combat logistics support squadron of the primary weapon system depot.

22.4.5. Munitions Liaison Officer. This a munitions officer or senior NCO designated to assist the unit mission planning cell (MPC).

22.5. Munitions Support:

22.5.1. Munitions and ancillary loading and/or maintenance equipment will be pre-positioned at each CTA site per information gained from employment base sponsor. Munitions will be delivered as complete rounds by appropriate AFSC 2W0X1 personnel per the unit munitions employment plan.

22.5.2. Full munitions loads will be simulated during employment exercises or operational readiness inspections (ORI) by loading and then unloading one-half the required standard conventional load (SCL). This will provide the capability to simulate full munitions loads in a combat scenario and still configure the aircraft for its next exercise mission in minimal time.

22.5.3. Forecast and request munitions requirements to support exercise tasking not later than 120 days (for CONUS) and 180 days (for OCONUS) prior to each major exercise. Refer to AFI 21-201 for munitions allocation transfer procedures. Contact host munitions activity no later than 90 days prior to planned exercise to ensure munitions allocations are on hand to support exercise taskings. If assets are not available 30 days prior to planned exercise, identify potential shortfalls up the chain of command to the servicing munitions activity.

22.6. Supply Support. The following procedures outline the basic requirements to exercise the supply support needed to sustain the high sortie rates required in actual combat and/or contingency operations. (Specific instructions for deploying and operating a supply function under combat and/or contingency conditions are contained in the AFMAN 23-110, Volume 2, publications.)

22.6.1. Critical repair cycle assets needed to support contingency operations may be pre-positioned to provide optimum support for maintenance operations. Pre-positioned assets will be maintained on appropriate detail records. Every effort will be made to maximize fill rates on pre-positioned details, and standard priority release and fill sequences will be followed.

22.6.2. Issues from pre-positioned details will be immediately processed. Expedited delivery action will occur for all replenishment assets.

22.6.3. In conjunction with supply, maintenance will ensure all critical DIFM assets are processed expeditiously through the repair cycle system until repaired or NRTS action is taken and the asset is evacuated off station.

22.6.4. Verified NMCS and PMCS MICAP requirements for ICT and contingency operations will be processed per AFMAN 23-110, Volume 2, Part 2, Chapter 17.

22.7. Fuels Support:

22.7.1. The fuels resource control center will ensure fuels resources are standing by the CTA as requested by the maintenance organizations conducting ICTs.

22.7.2. The fuels management function will develop and conduct a fuels training and certification program for ICT fuel servicing operations (where applicable). Fuels personnel participating in ICTs must receive initial and annual munitions safety training. This training will be documented and maintained by the fuels management function.

22.7.3. A person in AFSC 2F071 (operations expeditor) or civilian equivalent will coordinate, direct, and assist with the fuel servicing operations. ICT refueling operations will be conducted according to the applicable safety, equipment, and aircraft TOs and CLs.

22.7.4. Fuels personnel will be certified annually for ICT fuel servicing operations. Certification will be performed by the fuels management function using the program referenced in paragraph [22.5.2](#).

22.8. Transportation Support:

22.8.1. Combat, Contingency, and/or Deployed Operations. Support will be provided in accordance with the policies and procedures established by the host (supported) commander. AETC forces will augment those of the supported commander. Consequently, personnel and equipment allocations must be in accordance with applicable portions of the war and mobilization plan.

22.8.2. Exercise Operations:

22.8.2.1. Sufficient traffic management personnel in AFSC 2T0X1 (traffic management specialist) will be made readily available or placed in an on-call status to assure optimum support of MICAP shipment requirements as determined by the sortie generation schedule.

22.8.2.2. Adequate serviceable general purpose vehicles will be made available to direct sortie generation activities as one-for-one replacements for nonoperational vehicles assigned to those activities.

22.8.2.3. A mobile maintenance capability will be maintained for rapid minor repair of vehicles assigned to the direct sortie generation and CTA.

22.9. General Aircrew Duties, Additional Duties, and Ground Training:

22.9.1. During exercises and actual combat and/or contingency operations, aircrew members will only be tasked for combat mission flying and duties that directly support mission accomplishment, such as supervisor of flying, runway supervisor officer, FCFs, OLO, or MPC.

22.9.2. Units will develop combat mission briefing guides and combat aircrew aids to supplement current checklists. Aircrew aids should outline local procedures for combat sortie generation options.

22.9.3. Aircrews will comply with all normal training and currency requirements specified in applicable publications until wartime mission requirements make compliance impractical or inappropriate.

22.10. Mission Planning. Procedures will be developed to minimize task loadings associated with aircrew mission preparation. Wings will develop the capability to provide all mission planning information (weather, notices to airman [NOTAM], flight crew information file [FCIF], tasking and intelligence) to aircrews at mission planning and briefing locations and CTAs.

22.10.1. Units will use the period of time from initial tasking to commencement of combat and/or contingency operations or hostilities to accomplish aircrew mission planning, target study, intelligence updates, tactics briefings, etc., to reduce manpower requirements during periods of peak flying activity.

22.10.2. MPCs are critical elements of the combat sortie generation concept. Effective sortie generation frequently requires the MPC to provide full support for the commander's decision-making process and to assist in aircrew flight planning. Activation and composition of the MPC will be directed by the wing or OG commander.

22.10.3. Units must train sufficient personnel (aircrew and augmentees) to ensure continuity of MPC functions during combat and/or contingency operations.

22.10.4. During peak sortie surge periods, MPC manning should be adjusted so that mission crews are provided with comprehensive mission execution information to minimize aircrew rebrief time.

22.11. Briefings. Prior to the initial mission of a flying day, a flight briefing will be conducted in accordance with applicable 11-series instructions and locally developed combat briefing guides. Wings should standardize procedures to the maximum extent possible. Written copies may be substituted for oral briefings when practical. Follow-on briefings are required only if aircrew or flight integrity is not maintained or if mission-essential items change.

22.12. Flight Operations. To the maximum extent possible, aircrew, flight, and aircraft integrity should be maintained throughout the sortie surge period. During combat and/or contingency operations, aircrews should retain personal equipment at all times to preclude loss or nonavailability for use in another aircraft.

22.13. Intelligence Briefings and Debriefings:

22.13.1. All aircrew members will receive a situation update and premission briefing prior to each day's initial flight and an intelligence premission briefing prior to each subsequent flight. Premission briefings for subsequent flights will be limited to the essential intelligence items directly impacting the mission to be flown. Briefing formats will be in accordance with AETCI 14-101, *Air Education and Training Command Intelligence Functions and Responsibilities*.

22.13.2. All missions will be debriefed for vital intelligence and mission results. Procedures must be established to support briefings and debriefings, CTs, ICTs, and the exchange of intelligence between the CTA and wing or squadron operations centers (if applicable to unit mission).

22.14. Exercise Objectives. Combat sortie generation exercises are designed to train personnel, refine procedures, and provide a measurement of a unit's capability to generate combat sorties. The objective of these exercises is to develop the capability to turn combat aircraft and crews rapidly. In developing procedures, AETC units will communicate with their employment base sponsor unit regarding requirements to support combat sortie generation operations. AETC units will design combat sortie generation procedures suited for individual bases, based on joint support plan information containing descriptions of available facilities, communication, and base diagrams. For realistic training, only those assets mobilized and available at a deployed beddown location should be used. Training will be oriented to train by individual squadron.

22.15. Training Goals. Units will develop training scenarios that include special mission requirements (for example, fuel tank installation, special munitions loading) as appropriate for their expected taskings. Every effort must be made to reduce turnaround times.

22.16. Conducting Exercises. Each wing will conduct a sufficient number of exercises to maintain combat capability equivalent to unit taskings. Exercises will include tasked flying units and selected base support elements with wartime taskings. It is essential that all elements of the wing sortie generation capability be realistically exercised. As a minimum, exercises will meet the following minimum requirements:

22.16.1. If applicable, operations will be conducted from an isolated and/or deployed location. Unit participants are limited to only those aircrew and support personnel comprising the deployed unit type code and those personnel specifically designated for host base support functions. Tail number integrity will be maintained and generated. Deployed tail numbers will be the only aircraft available for employment sorties.

22.16.2. If applicable, operations in a nuclear, biological, or chemical environment consistent with training resources will be conducted.

22.16.3. Mission duration will be aligned with planned employment sortie lengths as closely as possible, including projected transit times from beddown to employment locations. Sortie duration will not be arbitrarily curtailed to make scheduled landing times. Where fuel and/or flying times dictate, procedures will be developed to meet the intent of this provision.

22.16.4. CTs, ICTs, tactics, and weapons deliveries will be consistent with employment concepts.

22.16.5. If required by OPlan tasking, night CT and/or ICTs will be scheduled during each exercise.

22.16.6. Upgrade training not part of formal training may be conducted on exercise missions providing mission demands are consistent with applicable training directives.

22.16.7. Exercise duration will be sufficient to provide comprehensive and realistic training for all elements of CT, ICT, and employment operations. Once training objectives have been met, termination of the employment phase is at the discretion of the wing commander.

22.16.8. Deployment sorties will be flown prior to the employment phase. Only generated and deployed tail numbers will be used for the remainder of the exercise.

22.16.9. To demonstrate munitions delivery and loading capabilities during exercises, the following guidance is provided:

22.16.9.1. During initial generations, one third of tasked primary assigned aircraft per unit must be loaded with ammunition. Full ammunition loads may be simulated by cycling at least 25 rounds of ammunition through the gun system, or, if the system is already loaded, by cycling in the bypass mode, ensuring adequate spacing between 25-round minimum sections in the ammunition loading system to accurately simulate full load timing. After completion of these loads, unit aircraft may be considered fully loaded.

22.16.9.2. For generations and regenerations, required munitions will be loaded on each aircraft. When quantities of munitions are insufficient to generate all aircraft with full loads, load and unload one-half the required SCLs, as necessary, until sufficient quantities become available for full loads.

22.16.9.3. During employment exercises, load and unload one-half the required standard conventional load between sorties on each applicable aircraft. Reload ammunition after each firing sortie.

22.17. ICT Teams. As a minimum, the wing loading standardization crew (LSC) and squadron lead crews (SLC), for tasked squadrons only, will maintain ICT qualification (mission ready status) at all times per the requirements of AFI 21-101 and **Chapter 23** of this instruction. These teams will provide the base training capability required to train teams in the event of a contingency.

Chapter 23

WEAPONS STANDARDIZATION (WS)

23.1. Description. The WS function only applies to Luke and Tyndall AFBs. The WS will conduct the unit load crew certification, weapons task qualification, and ICT programs and is the focal point for all related matters. The WS will provide all academic and practical training, including explosive safety, required to load munitions on aircraft. The need for load crews and ICT teams to maintain a high level of proficiency cannot be overemphasized because it directly affects the unit's capability to generate assigned aircraft in configurations that support unit training, combat, and/or contingency plans.

23.2. Terms Unique to the WS Program:

23.2.1. All-Up-Round. A munitions item shipped and stored in a complete, ready-to-use configuration. No preassembly or checkout is required.

23.2.2. Certification. The act of verifying and documenting a person's ability to load a particular type of aircraft, and munition or MFG within established standards as follows:

23.2.2.1. Initial certification is the first time a person is certified at his or her current duty assignment. Initial certifications include applicable aircraft functional checks.

23.2.2.2. Recertification is the certification of a person who has been decertified for any reason. Recertification may be done with or without aircraft functional checks at the discretion of the evaluators.

23.2.3. Certified Load Crew Member. A load crew member trained and certified by position according to this chapter.

23.2.4. Competent Familiarity Loading (CFL). The loading of a support munition (SM) that requires only that the individual have a satisfactory fundamental knowledge of the loading operation.

23.2.5. Decertification. The removal of certification status from a person for a specific munition type or MFG.

23.2.6. Evaluated Load. A loading task that is assessed according to this chapter.

23.2.7. Integrated Combat Turnaround (ICT). An approved exceptional servicing operation for fighter or bomber aircraft during which the simultaneous fueling, munitions loading and unloading, external fuel tank installation, general servicing, and other specific maintenance actions are performed. (Refer to AFI 21-101, 33-series TOs, and [Chapter 22](#) of this instruction.) An operation is considered hot if one or more aircraft engines are operating during fuel servicing. Hot ICTs require MAJCOM approval.

23.2.8. Integrated Load. The loading of two or more different types of munitions in a single operation.

23.2.9. Lead Crew. A load crew certified by the loading standardization crew (LSC) and assigned to the WS to assist in conducting the weapons standardization program. Lead crew members may have certification and decertification authority.

23.2.10. Limited Use Munition (LM). A munition used by a unit for firepower demonstrations, test, aircrew training or like operations, but which a unit would not normally use in war or a contingency. LMs may be designated on the UCML.

23.2.11. Loading Standardization Crew (LSC). A load crew designated by the wing weapons manager and the WS superintendent to administer the weapons standardization program. LSC members have certification and decertification authority.

23.2.12. Loading Task. The actions required by one crew member, in a designated position, to accomplish a munitions load.

23.2.13. Local Commander. The OG commander (as applicable to loading technical data).

23.2.14. Minimum Proficiency Requirement Loading (MPRL). The recurring evaluated loading of a munition on which an individual is certified.

23.2.15. Mission Ready Load Crew. A load crew that has completed required weapons academic training, is certified on all unit primary and designated support munitions, is qualified to load applicable aircraft guns, chaff and flare systems, and is qualified to perform ICTs.

23.2.16. Munitions Family Group (MFG). Munitions so similar that training and certification on one item in the group satisfies the requirement for the others. The LSC or lead crews teach load crews the major differences between applicable MFG items. After initial training on applicable individual items within the MFG, the MFG will be treated as a single item for documentation purposes.

23.2.17. Preload. A complete munition and suspension equipment package ready for loading.

23.2.18. Primary Munition (PM). A munition tasked by a war plan and designated on the UCML.

23.2.19. Quarterly, Semiannual, or Annual Interval. A period based on 3, 6, or 12 calendar months, respectively. For example, a quarterly requirement accomplished any time in February is due the last day of May.

23.2.20. Standard Conventional Load (SCL). A designation that includes the number, type, and configuration of munitions required for a specific mission on an aircraft.

23.2.21. Subcrew. Two or more certified and/or qualified personnel who may perform specific tasks.

23.2.22. Support Munition (SM). A munition which could be used in support of contingency plans or directives and designated on the UCML.

23.2.23. Task Assignment List (TAL). A functional grouping of procedural steps from applicable -33 TOs, by crew position, to be done in sequence by each crew member during load or ICT training operations. TAL's purpose is to standardize and facilitate the training of unit load crews and ICT teams. It is not a replacement for TO procedures.

23.2.24. Unit-Committed Munitions List (UCML). A document provided by HQ AETC/LGMW, which lists load crew requirements, PMs, SMs, and LMs for which a unit is tasked.

23.3. Wing Weapons Manager. (NOTE: See paragraph 1.10.) The wing weapons manager will:

23.3.1. Be responsible for all AFSC 2W1 manpower issues within the wing, to include coordination and approval for all manpower, work center, and organizational changes; AFSC changes; cross-training and retraining requests; and AFSC waivers for 2W1 personnel.

23.3.2. Perform AFSC leveling actions to ensure adequate manning for all AFSC 2W1XX authorizations within the wing. Ensure an equitable grade and skill level balance of AFSC 2W1X1 personnel between weapons sections and the armament flight.

23.3.3. Designate (in writing) and monitor the activities of the LSC, lead crews, and academic instructors. Specify the lead crews with certification and/or decertification authority. **NOTE:** The Luke AFB weapons manager is authorized to designate a crew (three personnel) to augment the LSC for the purpose of performing evaluations and certifications (including quarterly evaluations) as required by this instruction. As a minimum, this crew must be comprised of personnel assigned to the WS and all three members must possess at least a 5-skill level. The weapons manager will use the same criteria to select this crew that would be considered in designating LSC team members.

23.3.4. Develop and implement the wing ICT program.

23.3.5. Advise the OG commander of limiting factors on load crew status, ICT program, projected manning, equipment shortages, and other weapons-related items of local interest.

23.3.6. Provide the following information quarterly through the OG commander to HQ AETC/LGMW: (**NOTE:** This report will be compiled from existing unit files and/or databases and is exempt from RCS reporting per AFI 33-324, paragraph 2.11.12.)

23.3.6.1. Quantity of testers by part number, stock number, quantity authorized, quantity on hand, and quantity on order (including off-base requisition numbers). Identify status of each tester; that is, serviceable, unserviceable, AWM, AWP, etc. For parts on order include nomenclature, part number, stock number, and off-base requisition number. Provide any appropriate remarks.

23.3.6.2. AME/NIE, handling equipment, and other weapons or gun system support equipment assigned by equipment noun, quantity authorized, quantity on hand, quantity serviceable, quantity unserviceable, and remarks. Identify any significant difficulties associated with obtaining equipment, parts, or repairs. **NOTE:** Equipment is considered in commission if there are no discrepancies or parts required (to include TCTOs) that would hinder performance of the intended function. Equipment is not considered out of commission just because it is undergoing scheduled, preventative, or minor maintenance.

23.3.7. Review UCML tasking and coordinates changes and/or appendices with the OG weapons and tactics section and munitions activity.

23.3.8. Serve as an adviser to the wing exercise evaluation team and provide expertise in development of local exercises involving weapons loading.

23.3.9. Develop a wing instruction or MOI for launch and recovery of explosives-loaded aircraft in coordination with the explosive safety officer and airfield management (AFIs 91-201 and 91-202). Immediately prior to launch (IPL) and safing procedures may be performed in the aircraft parking area for unit exercises, ICT training, and daily use training munitions. The wing instruction or MOI will include the requirements to:

23.3.9.1. Arm and de-arm munitions loaded on aircraft only in approved areas.

23.3.9.2. Normally, safe guns and rockets in the de-arm area prior to aircraft returning to the parking area.

23.3.9.3. Normally, inspect and safe unexpended munitions prior to aircraft returning to the parking area (except as outlined in paragraph [23.3.9.](#)).

23.3.9.4. Isolate aircraft with unsafe or hung munitions until munitions are safed.

23.3.10. Designate the number of load crews, other than the LSC and lead crews, to be certified or qualified on conventional SM and LM. This decision will be based on unit tasking and approved by the OG commander.

23.3.11. Designate the number of load crews each tasked squadron must identify in primary and alternation positions on applicable mobility listings. (These crews must maintain certification at all times on PMs designated in the UCML.) The number of load crews will be based on a review of unit taskings and approved by the OG commander. Once established, the number of load crews will be published in the unit appendix to the UCML.

23.3.12. Designate the number of nonload crew personnel, by position, each tasked squadron must plan to qualify on ICTs in the event of actual or potential contingency operation and ensure squadrons identify these personnel in primary and alternate positions on applicable mobility listings. Plan to qualify a sufficient number of team members to support the amount of load crews that will be ICT qualified. The number of load crews will be based on a review of unit taskings and approved by the OG commander. Once established, the number of nonload crews will be published in the unit appendix to the UCML.

23.3.13. Designate the number of nonload crew personnel, by position, each tasked squadron must maintain ICT qualification on. Ensure sufficient numbers are designated to support WSS load crews that maintain ICT qualification (paragraph 22.20).

23.3.14. Designate the number of dedicated crew chiefs and their assistants to be qualified on IPL procedures. These numbers will be based on unit taskings and will be approved by the OG commander.

23.3.15. When applicable, designate the number of ICTs to be performed that will include external fuel tank installation and, if applicable, the number that will be performed at night. Both numbers will be determined by review of unit taskings and will be approved by the OG commander. **NOTE:** Night missions will not be scheduled for the sole purpose of performing ICTs. Night ICTs will only be performed during normally scheduled night missions.

23.3.16. In conjunction with the weapons sections, monitor the unit's weapons release reliability and gun fire out rates to determine conformance with command performance levels (99 percent for weapons release and 98 percent for gun fire out). Calculate the weapons release reliability rate by dividing the number of successful releases by the number of attempts. Calculate gun fire out rates by dividing the number of successful firing passes by the number of attempted passes. (Once a malfunction occurs, do not count any further attempts for the purpose of clearing are not counted). Provide performance levels, by squadron, to the QA office for inclusion in the quality assurance program (QAP) summary, and if required, to the OSS analysis for inclusion in monthly maintenance summaries. **NOTE:** AT-38 units will compute rates on a quarterly basis.

23.3.17. Negotiate a written agreement with the wing munitions manager concerning the maintenance and upkeep of weapons load training munitions.

23.3.18. Ensure the applicable command options and command missile procedures in AFI 21-201/AETC Sup 1 are included in the weapons standardization program, wing ICT program, and weapons maintenance.

23.3.19. Coordinate with the munitions activity to establish an instruction governing accountability munitions to meet flight line requirements.

23.3.20. Ensure introductory training is provided to newly assigned personnel on aircraft weapons maintenance, weapons release, and gun systems. Ensure training required to load munitions on aircraft is provided by WS only.

23.3.21. Develop a list of minimum requirements for load crew CTKs (by aircraft MDS) to ensure standardization and provide maximum interoperability.

23.3.22. Determine the tasks associated with "Red X-limited" certification of AFSC 2W1XX personnel as it applies to the unit special certification roster and requirements of this instruction.

23.3.23. Review GASs for 3-skill level technical training school graduates prior to their submission. The purpose of this review is to ensure the weapons manager is aware of supervisory concerns about technical training school graduates.

23.3.24. Ensure the quantity of AFSC 2W1 supervisors authorized to use CAMS screens 45 and 46 (non-JDD installation and removal) for installing and removing AME/NIE on aircraft is limited to a minimal amount of supervisors required to perform required documentation in each weapons section.

23.3.25. Ensure documentation in the automated MMS for AME routinely installed for periods longer than 30 days (such as the F-16 wing tip launchers and wing or center line pylons) is accomplished using the appropriate JDD. If actions are documented on AF Form 2430, all other AME may be installed and removed using non-JDD procedures.

23.4. WS Superintendent. The WS superintendent will develop and manage the WS program, set standards, develop local policies and procedures, and interpret technical data and directives governing the WS program. In addition to applicable flight chief and section chief responsibilities identified in [Chapter 2](#), the WS superintendent will:

23.4.1. Evaluate and certify the LSC according to this chapter. (The wing weapons manager will assist if necessary.)

23.4.2. Coordinate with weapons sections to schedule crews for initial or recurring load and ICT training or evaluations. (An LSC member may be designated to perform this responsibility.) Document monthly scheduling effectiveness and submits a summary to the QA office for inclusion in the QAP summary. List the number of scheduled events (all events), total number of crews trained or evaluated, and scheduling effectiveness percentage. Identify problems that detracted from overall scheduling effectiveness.

23.4.3. Submit a monthly summary of load crew evaluations, identifying positive and negative trends, to QA for inclusion in the QAP summary.

23.4.4. Coordinate with OSS and/or operations squadron PS&D to schedule aircraft for training.

23.4.5. Manage training munitions, components, and accessories. Ensure sufficient serviceable training munitions are available to support load crew and, if applicable, ICT training programs.

23.4.6. Appoint a supply custodian for training munitions (AFMAN 23-110, Volume 2, Part 13, and applicable AFI 21-200 series instruction). The custodian will:

23.4.6.1. Establish a supply point with munitions operations and/or supply for conventional training munitions (AFMAN 23-110 and AFI 21-201).

23.4.6.2. Inspect, document, and schedule the repair of discrepancies through the munitions activity.

23.4.6.3. Forecast annually for training munitions (AFI 21-201).

23.4.6.4. Order training munitions and/or items to meet unit needs and ensure training munitions are representative of the parent munitions item in configuration, body color, and mechanical function.

23.4.7. Track and manage load crew certification and qualification status manually through the use of the WLCMP or a locally developed automated system (paragraph 23.16.). Products will be produced and distributed at least twice each month to the weapons sections. (One copy will be generated for WS records.) The system used must reflect formed crews by number, crewmember position, and individual. Additionally, the system must reflect, by individual, the next:

23.4.7.1. MPRL due date for each munition.

23.4.7.2. Quarterly evaluation due date.

23.4.7.3. Preload due date, if applicable.

23.4.7.4. ICT qualification due date.

23.4.7.5. CFL due date for each munition.

23.4.7.6. Training due date for each weapons task qualification item not tracked in the automated MMS.

23.4.8. Establish and manage a wing incentive program for the recognition of load crews.

23.4.9. Initiate action to certify deploying load crews on support munitions if required.

23.4.10. Maintain a copy of all loading tech data for assigned MDS aircraft. (Checklists need only be maintained for munitions listed on the UCML and appendix.)

23.4.11. Coordinate with the applicable operations squadron supervisor to ensure load training aircraft are properly configured and suitable for use.

23.4.12. Develop time standards for integrated loads.

23.4.13. Ensure load crews are qualified to load and unload ammunition in the internal gun systems and preloaded chaff and flare magazines in defensive countermeasures systems on assigned aircraft.

23.4.14. Ensure load crews are trained on both parent stations and triple ejector rack (TER) or bomb rack units (BRU) for conventional munitions stations capable of single and/or multiple carriage, if applicable.

23.4.15. Ensure command options and missile procedures (AFI 21-201/AETC Sup 1) are incorporated in the WS program.

23.5. Loading Standardization Crew (LSC). The LSC will work for the WS superintendent and conduct the WS and evaluation program. The LSC chief must be at least an AFSC 2W171; all other LSC

team members must be at least an AFSC 2W151. The LSC will train, evaluate, and certify the lead and load crews in safe, reliable munitions loading procedures. In addition, the LSC will:

- 23.5.1. Conduct and monitor training to ensure personnel maintain a high degree of proficiency in loading unit-committed munitions.
- 23.5.2. Monitor certification and recurring training documents or automated products to ensure all load crewmembers complete required proficiency and academic training. Take decertification action if recurring requirements are not met.
- 23.5.3. Review and recommend approval or disapproval of AFTO Forms 22 applicable to weapons-loading TOs. An LSC member will sign the local approval block on approved forms and forward them to the QA product improvement manager.
- 23.5.4. Develop and coordinate weekly and monthly load crew training schedules and provide them to OSS PS&D.
- 23.5.5. Monitor lead crews.
- 23.5.6. Establish and manage the weapons task qualification program (**Chapter 3**).
- 23.5.7. Monitor flight line munitions operations.
- 23.5.8. Perform quarterly evaluations on all certified load crews. A lead crew member with certification and decertification authority may assist, but at least one member of the LSC must be present during every quarterly evaluation.

23.6. Lead Crews. Lead crews will be assigned to WS. They will work for the LSC and assist in the WS program. Lead crew members must possess at least an AFSC 2W151. One lead crew will be assigned from each operations squadron. Lead crews will assist in training, evaluating, and certifying unit load crews. They may be required to report to the operations squadron with which they are aligned for deployments, generations, and exercises.

23.7. ICT Program. The wing weapons manager and WS will be the unit focal points for the ICT program. In conjunction with the operations squadrons, they will coordinate with other wing agencies to establish the unit ICT program. A highly qualified AFSC 2A3X3, in the minimum grade of E-5, will be assigned to WS to help develop, implement, and manage a program that:

- 23.7.1. Implements AFI 21-101 and **Chapter 22** of this instruction as they relate to ICTs.
- 23.7.2. Is consistent with unit taskings.
- 23.7.3. Provides initial ICT academic and practical training for load crews, aircraft maintenance personnel, ATSS, and CTDs.
- 23.7.4. Ensures deploying personnel are familiar with their bed-down locations and the operational environment.
- 23.7.5. Ensures all PMs are used.
- 23.7.6. Records load crew ICT qualifications on AF Form 2435, **Load Training and Certification Document**, and documents nonload crew personnel training in the automated MMS or WLCMP.
- 23.7.7. Ensures initial and recurring evaluations of ICT qualified personnel are documented on AF Form 2419.

23.7.8. Evaluates load crews quarterly and nonload crew personnel semiannually in their qualified position. (CTDs are only required to be evaluated annually.) **NOTE:** The senior WS evaluator will be the determining authority on overall ICT ratings.

23.7.9. Disqualifies personnel who fail to complete required ICT evaluations unless exempted by certification guidelines in this chapter. (ICT disqualification does not necessarily result in munition decertification.)

23.7.10. Ensures units perform training proficiency ICTs on a continuing basis as determined by the OG commander.

23.7.10.1. ICTs performed for quarterly load crew proficiency training must be full munitions configurations as identified and published in the unit appendix to the UCML (**Chapter 1**). The minimum requirements for a full munitions load are defined as any load consistent with the requirements of the mission essential subsystems list (MESL) for the applicable aircraft and mission (AFI 21-103/AETC Sup 1). All other training proficiency ICTs may be half up and half down according to **Chapter 22** of this instruction and AFI 21-101. (Ammunition loads for both types of training proficiency ICTs may be performed according to the procedures in **Chapter 22**.)

23.7.10.2. Aircraft configurations will be consistent with those anticipated during employment (external fuel tanks, ECM pods, LANTIRN pods, etc.).

23.7.10.3. A representative number of ICTs will be performed at night, if applicable. **NOTE:** Night missions will not be scheduled for the sole purpose of performing ICTs. Night ICTs will be only performed during normally scheduled night missions.

23.7.10.4. A representative number of ICTs will include external fuel tank installation, if applicable.

23.7.10.5. ICTs will be scheduled in the aircraft utilization and maintenance plans and schedules.

23.7.10.6. Aircraft will be MC.

23.7.10.7. Aircraft will be taxied into the CTAs.

23.7.10.8. ICT procedures will be used per the applicable -33-1-4 weapon system TO.

23.7.10.9. Time standards for ICT operations are specified in AFI 21-101 and **Chapter 22** of this instruction.

23.7.11. Provides training for fighter aircraft crew chiefs and their assistants on complete IPL procedures (including munitions or weapons station arming) contained in the applicable -33-1-4 weapon system TO. Training will be conducted in conjunction with training ICTs. IPLs will not be included in overall ICT timing. In air-to-air units, IPLs will include all arming procedures. These personnel will be evaluated on IPL performance in conjunction with their semiannual evaluations.

23.8. Transient Aircraft. Arming, de-arming, and munitions loading operations on transient aircraft may be performed by any weapons load crew certified and/or qualified on the munition and aircraft. If appropriate technical data is available, the OG commander may direct the LSC or a lead crew to arm, de-arm, load, and unload an aircraft on which they are not certified and/or qualified. In such cases, the aircrew should be available for consultation on aircraft peculiarities. Help should be requested from HQ AETC/LGMW if requirements cannot be met. Local procedures must be developed to control impulse cartridges removed from transient aircraft.

23.9. Academic Training. A highly qualified AFSC 2W171 will be assigned to develop, administer, and manage the weapons academic training program. The instructor will conduct required initial and recurring weapons academic training for unit load crew members, loading supervisors, ICT team members, and other personnel who maintain specific weapons task qualifications. The academic instructor may help conduct practical training. Academic training requirements are as follows:

23.9.1. Initial academic training will be completed before practical training is started. Recurring academic training will be given annually. It may also be part of training and recertification of personnel for failed loads.

23.9.2. Training requirements and course control documents will be coordinated with the LTF. Course control documents will be tailored to unit needs. As a minimum, the following items will be covered in specific relation to weapons loading and ICT operations: publications, safety, security, aircraft familiarization, munitions, AGE and support equipment familiarization, test equipment, and special tools and handling equipment.

23.9.3. Load crew academic training may fulfill the requirements for explosive safety training if the requirements of AFI 91-202 are met and included in the course.

23.9.4. All load crew members, loading supervisors, and other personnel who maintain specific weapons task qualification will complete initial and recurring academic training.

23.10. Practical Training:

23.10.1. Practical training will start when academic training has been completed. Practical training will be conducted in a facility dedicated to load crew training. The facility must be of sufficient size to accommodate fighter aircraft, required training munitions, and associated support equipment.

23.10.2. LSC or lead crews will administer practical training to each load crew member on required munitions and aircraft. They will ensure practical training duplicates the operational conditions to the maximum extent possible.

23.10.3. If a specific type or model of munition was requisitioned but has not been received, any type or model of the basic item may be used for load crew training until the munition is received. The differences will be briefed to load crews.

23.10.4. Load crews must be familiar with munitions serviceability criteria. Blanket rejection of training munitions or rejecting munitions solely because they are inert will not be authorized during load training.

23.10.5. Initial SM training will be accomplished in conjunction with initial PM training and certification. When a new PM or SM is designated, crews will be certified on PMs or CFL trained on SMs within 30 days after receipt of training items.

23.10.6. Load crew members will be familiar with the operation of AGE and support equipment that may be used during loading operations.

23.11. Task Assignment Lists (TAL). LSC will develop unit TALs to be used during all load training operations except those for which job-oriented procedures have been published. TALs are not required for use during MPRLs, quarterly evaluations, and quarterly ICTs. The following are minimum responsibilities of individual crew members:

23.11.1. Crew member number one is the load crew chief. The load crew chief is in charge of the loading operation and will position cockpit switches during functional checks.

23.11.2. Crew member number two will perform the pylon and rack preparation and operate test equipment during functional checks.

23.11.3. Crew member number three will perform munitions preparation and operate the bomb lift truck during loading operations.

23.12. Certification. The following guidelines will be used to establish the WS and evaluation program:

23.12.1. With the exception of the LSC and lead crews, load crew members will not be certified on more than 10 munitions and MFGs combined. Dual position certification is authorized, but members may not be certified on more than 10 munitions and MFGs combined. Personnel certified on two separate MDS aircraft will alternate quarterly evaluation and ICT requirements between the two tasked aircraft. MPRL requirements will be accomplished on both aircraft.

23.12.2. Load crew members will be certified or qualified on all PMs.

23.12.3. The LSC and lead crews will be certified or qualified on all SMs to maintain a training base for upgrading other unit load crews.

23.12.4. The LSC will be certified or qualified on unit LMs.

23.12.5. A minimum of two certifying officials will be required to evaluate load crews.

23.12.6. Applicable station functional checks will be required during all initial certification and quarterly evaluation loads. If functional checks are not performed during MPRLs, time standards will be adjusted accordingly (paragraph 23.17.). Performance of functional checks during recertification of a decertified crew or crew member is optional.

23.12.7. Current certification of a load crew member will be valid worldwide. A PCS does not require recertification by the gaining unit if the individual is certified on the same munitions, aircraft, and position. Give load crew members a copy of AF Form 2435 prior to their PCS departure.

23.12.8. Individuals will be decertified and/or disqualified if they:

23.12.8.1. Fail an evaluation as outlined in paragraph 23.15.

23.12.8.2. Do not complete a required evaluation (quarterly, MPRL, ICT, etc.). If an individual is TDY, on emergency leave or normal leave due to emergency or unforeseeable circumstances, incapacitated, or involved in an unannounced local or higher headquarters exercise, he or she (or the load crew) need not be decertified and/or disqualified if the current month's MPRL or evaluation requirements and all past due evaluations are completed within 30 days of the member's return to duty. **NOTE:** The LSC will review each situation at the 90-day point to determine if the individual or load crew should retain certification.

23.12.8.3. Do not complete required recurring academic training. Individuals will be administratively decertified and/or disqualified on all UCML items until academic training is completed.

23.12.9. Units that have the AGM-65 as a PM or SM are authorized both the LAU-88 and LAU-117 launchers. Accomplish quarterly loading requirements by alternating launchers. LAU-117 loading need only be accomplished using the preload method; LAU-88 loading will be accomplished by the single load method. Additionally, the LAU-88 will be loaded by the preload method at least once

annually. When AGM-65s are listed as LM, units will designate one standard method for training and flight line operations.

23.13. Minimum Proficiency Requirement Loading (MPRL):

23.13.1. Certified load crews will perform proficiency loads that are monitored by a lead crew or the LSC members. Load crew integrity must be maintained to the maximum extent possible. Lead crew proficiency loads will be monitored by the LSC. Proficiency loads performed by the LSC need not be monitored.

23.13.2. At least quarterly, load crews will be evaluated on the loading of all conventional munitions for which they are certified. One third of the conventional PMs will be loaded monthly.

23.13.2.1. Load crews in air defense or air superiority units will perform proficiency loads monthly. ICTs may be used to fulfill these requirements if this option is not used for 2 consecutive months.

23.13.2.2. Loads should be rotated through all PMs. Realistic integrated configurations, compatible with unit tasking and the aircraft flight manual, will be used during the proficiency loads.

23.14. Quarterly Evaluations. The LSC will evaluate each load crew once a quarter on one of the unit PMs. (All unit PMs will be used on a rotating basis.) Quarterly evaluations are not required for lead crews. ICTs will not be used to meet this requirement. Load crew integrity must be maintained for these evaluations.

23.14.1. Units with a limited quantity of PMs may use LMs to satisfy this requirement if a PM is used for the first quarterly evaluation following an initial certification (crew or individual) and a quarterly evaluation is performed on all PMs during the year following the initial certification. A quarterly evaluation must be performed on each PM; an MFG will not satisfy this requirement.

23.14.2. Load crews failing to accomplish quarterly evaluations will be decertified on all munitions unless exempted (paragraph [23.12.](#)). Crews undergoing initial certification or recertification of one or more members must perform a quarterly evaluation during the quarter in which they are certified regardless of other member's quarterly evaluation dates. The quarterly evaluation due date for newly formed crews composed of three currently certified members is the earliest due date of the three members. **NOTE:** No more than 90 days may elapse between quarterly evaluations unless the crew is coded out for reasons specified in paragraph [23.12.](#)

23.15. Evaluation Criteria. The following criteria applies to initial certification, MPRLs, quarterly evaluations, and ICTs:

23.15.1. Exceeding time standards will result in a failed rating for the load crew chief. Exceeding time standards on an ICT will result in the disqualification of the load crew chief only if caused by the load crew.

23.15.2. More than three errors by a crew member will result in a failed rating for the individual (not applicable to ICTs).

23.15.3. A safety or reliability error will result in a failed rating for the individual.

23.15.4. The lack of technical proficiency will result in a failed rating for the individual.

23.15.5. For integrated loads, the evaluator may elect decertification on any or all munitions loaded. When the same rating is not applied to all munitions loaded during an integrated load, a separate AF Form 2419 will be completed.

23.15.6. ICTs are considered overall failures if timing criteria is not met, a safety or reliability error is committed, or a step is omitted that would impede mission capability.

23.16. Documentation. The WLCMP, a locally developed program, or manual methods may be used to document and manage load crew certification and qualification. (Locally developed programs must meet all the documentation requirements of this chapter.) Contact the Air Force Logistics Management Agency, AFLMA/LGM, Maxwell AFB-Gunter Annex, AL 35114-3236, to obtain a copy of the WLCMP.

23.16.1. Load crew certification, decertification, ICT qualification, quarterly evaluations, MPRLs, CFLs, and ICTs will be documented on AF Form 2435. Separate forms will be prepared for each person by crew position and aircraft MDS. Complete the form as follows:

23.16.1.1. Blocks 1 Through 6. Self-explanatory.

23.16.1.2. Block 7. List each applicable munition from the unit UCML on a separate line. List MFGs as a single entry, using the primary tasked item of the group in the title. For example, use MK-82 MFG when MK-82 is the primary tasked item from its group. Make a separate entry for ICT qualification if applicable.

23.16.1.3. Block 8. Enter dates upon certification or ICT qualification. Do not enter dates for CFLs.

23.16.1.4. Blocks 9 and 10. Self-explanatory.

23.16.1.5. Block 11. Enter signatures of certifying officials only upon certification and after completion of blocks 7 and 8. (Signatures are only required on printed copies.)

23.16.1.6. Block 12. List each munitions separately. (Do not use MFGs.) Enter the date the MPRL, CFL, quarterly evaluation, or ICT was accomplished in the applicable month column. Place the letter E after the date for the quarterly evaluation regardless of the rating. Do not use the letter E for ICT ratings. If the required loads are not completed and paragraph **23.12.** applies, enter one of the following codes in the month column: temporary duty (TD), leave (LV), incapacitated (ED), or exercises (EX). If the AF Form 2435 is reaccomplished, enter only the most current information and dates. If the latest date is from a previous calendar year, enter it on the appropriate line immediately to the left of the "Jan" column. Annotate the top of the front page with record reaccomplished and dated.

23.16.2. Quarterly evaluations and decertifications will be documented on AF Form 2419. Completed forms will be routed to the weapons manager, weapons section, operations squadron maintenance officer or superintendent, operations squadron commander, and LSC (for file). Local procedures may be developed for review of MPRL documentation.

23.16.3. Load crew records may be maintained in the WLCMP. A complete load crew record will include the following:

23.16.3.1. AF Form 2435 for each load crew member.

23.16.3.2. AF Form 2419 with the most current quarterly evaluation.

23.16.3.3. AF Form 2419 with the most current ICT.

23.16.4. Copies of load crew certification records will be sent with load crews to TDY locations if loading tasks are to be performed.

23.16.5. Academic and qualification training will be documented in the automated MMS or WLCMP.

23.17. Munitions Load Time Standards:

23.17.1. All munitions listed in a single block comprise a family group for the respective aircraft mission type (**Table 23.1.**). Load time standards apply to all operational users of the munitions and aircraft listed. They are the minimum proficiency requirements for weapons load crews. Units may establish more restrictive standards for local use. All items require certification in accordance with this chapter (except as noted in **Table 23.1.**, Note 6). HQ AETC/LGMW will establish MFGs and time standards for use in test projects and time standards for munitions and aircraft not listed.

23.17.2. The standard load times are for the respective single store with applicable aircraft station functional check and installation of impulse cartridges if required. An additional 10 minutes will be allowed for each added station check, except missile stations, on fighter aircraft. An additional 7 minutes will be allowed for each like store added to fighter loads. Load times are additive when more than one type of munition is loaded on fighters. For example, if an F-16 is to be loaded with two AIM-9s and a MK-82, the load crew is allowed 30 minutes for the first AIM-9, 7 minutes for the second AIM-9, and 35 minutes for the MK-82, for a total of 72 minutes. Units should develop optimum time standards for integrated loads.

Table 23.1. Munitions Family Groups and Load Time Standards.

I T E M	A	B	C	D	E
	Family Group	F-15	F-16	F-22 (projected)	Note
1	AIM-7	35			1
2	AIM-9	30	30		1
3	AIM-120	35	35		1
4	AGM-65	35	35		1, 2, and 3
5	AGM-88		35		
6	AGM-130	45			2 and 4
7	B-61	60	60		5 and 6
8	CBU-87/89/97/102/103/104/105	35	35		
9	GBU-10/12	35	35		2
10	GBU-15/EGBU-15	45			2 and 4
11	GBU-24/27	35	35		2
12	GBU-28	45			2
13	M129, MK82/84	35	35		7
14	MK-82/84 AIR	35	35		7
15	GBU-31/32	35	35		
16	AGM-154	35	35		2
17	SUU-25	35	30		6
18	ALE-50		20		6 and 8
19	chaff/flares	10	10		6 and 8
20	2.75-inch rockets		35		6
21	20mm ammunition	30	30		6

NOTES:

1. No time is allowed for the functional check of additional missile launchers.
2. Add 15 minutes for each additional store or LAU-117.
3. The time is for one LAU-117 (any method). The time for loading one preloaded LAU-88 is 45 minutes; two LAU-88s--60 minutes; single missile out of container--35 minutes; single missile that must be transferred out of the container--50 minutes; three missiles out of the container--60 minutes; and three missiles in containers--90 minutes.
4. Add 15 minutes when accomplishing infrared (IR) radar.

5. Includes a short flight circuit test (FCT) such as F-16, 75060/W-11 or F-15E, A/E24T-199. When a long FCT is to be included in a loading operation, add the time standard listed in the applicable -6 TO to the time standard.
6. Personnel may be task qualified in lieu of certification.
7. Add 5 minutes for each fuze extender used.
8. The time is for one module, magazine, or ejector channel. Add 5 minutes for each additional module, magazine, or ejector channel.

Chapter 24

TRAINING EQUIPMENT MAINTENANCE

Section 24A—Application

24.1. Overview. This chapter outlines the maintenance management requirements for AETC training equipment maintenance. It applies to AETC organizations responsible for performing on- and off-equipment maintenance on training and training support equipment, to include training wings (TRW), training groups (TRG), and training detachments (TD). This chapter does not apply to training equipment maintained by CLS contracts administered by commands other than AETC.

Section 24B—Trainer Maintenance Activity Responsibilities (Except 982 TRG TDs)

24.2. Group Commander Responsibilities:

24.2.1. Group commanders with trainer maintenance activities assigned will develop an instruction or contractor directive, if appropriate, to identify the specific application of policies and procedures outlined in this instruction. At contracted organizations, commanders should ensure the contractor is included in the development of the instruction.

24.2.2. The instruction will detail the interface between the trainer maintenance activity and supported school activities and will include all specific programs, operating procedures, and requirements applicable to the trainer maintenance activity. The group commander will determine the extent to which policies, procedures, and requirements outlined in this instruction apply to the trainer maintenance activity. **NOTE:** Contracted trainer maintenance activities are not bound by any of the organizational requirements outlined in this instruction.

24.2.3. As a minimum, each trainer maintenance activity will include the following functions, programs, and/or processes as determined by the group commander:

24.2.3.1. Management programs, management support, MOC, PS&D, and EM (**Chapter 1**).

24.2.3.2. Production activities and procedures (**Chapter 2**).

24.2.3.3. Maintenance production functions (**Chapter 3**).

24.2.3.4. Quality maintenance (**Chapter 4** and the quality program accepted by the government).

24.2.3.5. Planning (**Chapter 5**).

24.2.3.6. Inspection management (**Chapter 8**) and time change item (TCI) management (**Chapter 7**).

24.2.3.7. TCTO management (**Chapter 9**).

24.2.3.8. Deferred discrepancy management (**Chapter 10**).

24.2.3.9. TO management (**Chapter 12**).

24.2.3.10. Cannibalization program (**Chapter 16**).

24.2.3.11. Supply (**Chapter 17**).

24.2.3.12. RCAMS (**Chapter 18**).

- 24.2.3.13. Tool management program (**Chapter 19**).
- 24.2.3.14. IREP (**Chapter 21**).
- 24.2.3.15. Unique maintenance procedures (paragraph **24.4**).
- 24.2.3.16. Local maintenance documentation procedures.

24.3. Squadron Commander Responsibilities. Squadron commanders (or contract program managers at contracted units) are responsible for managing the maintenance function. In addition to the specific responsibilities identified in **Chapter 1**, the commander or contract project manager will:

- 24.3.1. Ensure support for the maintenance mission is included in plans, programs, and host tenant agreements.
- 24.3.2. Ensure training equipment is operational to support resident and TD training courses.
- 24.3.3. Coordinate on the monthly training schedule (when it is published separately from the maintenance plan).
- 24.3.4. Approve the items of equipment exempt from annual inspection requirements. At contracted activities, this must be coordinated with the functional director or commander; the responsibility may not be delegated.
- 24.3.5. Ensure maintenance actions are documented in the automated MMS in accordance with applicable 00-20 TOs.
- 24.3.6. Ensure AETC trainer maintenance goals and standards are met.
- 24.3.7. Ensure maintenance is performed in accordance with applicable tech data.
- 24.3.8. Ensure deviations from technical data maintenance and/or inspection requirements on configuration controlled trainers or systems are coordinated with the applicable SM.

Section 24C—Maintenance Requirements (All Activities)

24.4. General. For equipment designated as trainers, only the systems required for technical training (or those required to ensure safety or system integrity) need to be maintained. (This does not apply to "temporarily" grounded aircraft or operational equipment or systems on loan from MAJCOMs or ALCs.) The systems to be maintained on "permanently" grounded aircraft are identified on the aircraft utilization and requirements listing published in coordination with the school activity and trainer maintenance activity.

24.5. Technical Data Applicability:

24.5.1. Training and support equipment will be maintained in accordance with applicable technical data. The specific policy governing the use and modification of technical data is contained in TO 00-5-1. Some items of training equipment may be operated and maintained with original contractor data because formal technical data was never issued and/or the contractor data was never assigned a TO number. Additionally, training equipment developed by AETC (or other command trainer development activities) will be maintained in accordance with the technical manuals supplied by the trainer development activity.

24.5.2. Inspection and lubrication requirements may be adjusted to correspond with training requirements and equipment usage and to prevent over or under inspection. Additionally, where significant savings may be achieved, the commander or contract project manager (in coordination with the functional commander or director) may authorize deviations or changes to technical data requirements, including substitution of materials. In all cases, safety or design function must not be compromised. Any deviations to technical data requirements for configuration controlled training equipment or systems must be coordinated with the applicable SM.

24.5.3. Equipment with no established inspection requirements must be inspected annually unless specifically exempted by the commander or project manager. A master listing of items exempt from inspection requirements will be maintained and reviewed annually by the PS&D function. Source documents for exempt items will be maintained by the QA function.

24.6. TCTO Process. The TCTO process is outlined in AFI 21-101, this instruction, and TO 00-5-15. The logistics management function is responsible for determining applicability of TCTOs for trainers and support equipment.

24.7. Maintenance Documentation. Maintenance on configuration controlled or operational training equipment and systems will be documented in the applicable automated MMS in accordance with 00-20-series TOs. Status symbols defined in TO 00-20-6, *Inspection System, Documentation, and Status Reporting for Ground Launched Missiles and Their Trainers, SE, and Ground C-E Equipment*, may be used for ground-launched missile trainers.

24.7.1. Commanders or contract project managers will determine the documentation requirements for nonconfiguration controlled and nonoperational training equipment and systems.

24.7.2. Training maintenance performed by training school personnel need not be documented in the automated MMS. The school activity is responsible for developing procedures for ensuring this type of maintenance is documented and cleared in accordance with the 00-20-series TOs. These procedures must be coordinated with the trainer maintenance activity and may be included in the instruction or directive outlined in paragraph [24.2](#).

24.8. Training School Maintenance. Training equipment will normally be assigned to the training school. Training school personnel are responsible for performing required operator or user inspections per applicable technical data and Air Force and AETC directives. Training school personnel may also perform minor maintenance (such as replacing fuses and lamps, tightening nuts and bolts, and cleaning) within the limitations of available tools and technical data.

24.9. Ground Instructional Training Aircraft (GITA). GITAs are aerospace vehicles either temporarily or permanently grounded for training. The differences are as follows:

24.9.1. Temporarily Grounded. Temporarily grounded aerospace vehicles are subject to recall to the active fleet and are in assignment code TJ (AFI 16-402, *Aerospace Vehicle Programming, Assignment, Distribution, Accounting, and Termination*).

24.9.1.1. Only those items requested by the ALC SM will be considered for removal. If the item does not affect training and if approved by 2 AF/DO, the part will be removed and turned in as per ALC SM instructions.

24.9.1.2. Units are responsible for storing uninstalled or removed equipment that is not required for training.

24.9.2. Permanently Grounded. Permanently grounded aerospace vehicles are those declared excess to future operation or flying requirements by HQ USAF. Aircraft in this category will be redesignated by the addition of the prefix G to the basic MDS and identified with assignment code TX. Permanently grounded missiles retain their original MDS without a prefix. **NOTE:** Aircraft that have been terminated from the Air Force inventory per AFI 16-402 will not be reported as GITAs. Any questions about the designation of an aircraft used for training should be directed to HQ AETC's aerospace vehicle distribution office (AVDO).

24.9.2.1. Upon assignment of a permanently grounded GITA to the training school, the SM will initiate a preliminary "save list," identifying items to be removed and turned in to supply.

24.9.2.2. In coordination with the trainer maintenance activity, the commander of the training school to which the GITA is assigned will review and approve the list. Ensure items to be removed are not required for training and will not disfigure the appearance of the GITA. After the items on the "save list" have been removed and turned in, any further removal and turn in must be coordinated with the applicable logistics support function and approved by 2 AF/DO.

24.9.2.3. If an item on the save list is not removed, annotate the reason for not removing it and coordinate with the applicable SM and 2AF/DO. If items on the save list are required for training and an unserviceable item will suffice, units should inform the SM.

24.10. GITA Maintenance. The commander or project manager of the trainer maintenance activity is responsible for the maintenance of GITAs used in support of the training mission. The commander or project manager will:

24.10.1. In coordination with the training school, determine which systems and subsystems are required to support the training mission. Consider present, future, and cross-utilization of systems between schools or courses when making determinations. These systems will be maintained in the same configuration as operational equipment.

24.10.2. Prepare a separate memorandum for each GITA, addressed to the appropriate ALC SM for the aircraft and informing the SM of the systems and subsystems that will be maintained in operational configuration. Provide an information copy to 2 AF/DO and the applicable logistics support function. When changes in requirements occur, initiate a new memorandum to the SM, again informing 2 AF/DO and the applicable logistics support function.

24.10.3. Place retained systems and subsystems not currently being used for training into extended storage per applicable technical data.

24.10.4. If required, develop and prepare inspection checklists for pre-use condition and safety inspection of equipment.

24.10.5. Ensure required inspections and maintenance are performed.

24.10.6. Ensure accurate aerospace vehicle inventory reporting is performed on applicable GITAs (AFI 21-103).

24.10.7. Ensure maintenance is documented in accordance with 00-20-series TOs and guidance in this chapter.

24.10.8. Ensure timely completion of applicable TCTOs on systems being maintained in operational status (configuration controlled) and proper configuration status accounting is maintained.

24.10.9. To ensure safety of operation, ensure TCTOs on systems not being maintained in operational status (nonconfiguration-controlled) are accomplished when directed by the applicable SM.

24.11. Non-GITA Aircraft. Maintenance requirements for non-GITA aircraft used for training are determined locally and will meet the minimum requirements for trainers as outlined in this chapter. **NOTE:** Any systems that are operational and being utilized will be maintained per applicable technical data.

Section 24D—Training Equipment Management (982 TRG TDs Only)

24.12. Managing Training Equipment. This section prescribes procedures for the management of training equipment at 982 TRG TDs. Commanders must be thoroughly familiar with the TD support mission and functionally manage the local planning, scheduling, controlling, and directing of maintenance in support of that mission. The 82 TRW Commander has prime responsibility for all TD trainers.

24.13. TD Commander Responsibilities. TD commanders will ensure the accomplishment of maintenance for equipment assigned in support of the training mission. TD personnel will perform all maintenance within their capability. Request assistance in performing maintenance beyond TD capability according to this instruction (paragraph 24.8.) and applicable 00-series TOs. Each TD will perform the functions of maintenance operations and QA to the degree required for effective maintenance management. The host commander will provide additional support in these areas as outlined in **Chapter 1** and **Chapter 4** and as negotiated in support agreements. As a minimum, TD commanders will:

24.13.1. Ensure sound and effective maintenance practices are implemented within the TD. Institute a maintenance management program, designating TD instructors responsibility in specified areas to ensure timely and effective completion of required maintenance actions.

24.13.2. Require strict adherence to technical data and management procedures.

24.13.3. Ensure timely accomplishment of TCTO kit-proofing as directed by the MAJCOM.

24.13.4. Take necessary actions to move TD equipment as required (paragraph 24.20.).

24.13.5. Designate, in writing, supervisory personnel to clear Red-X conditions on training equipment.

24.13.6. Negotiate with the host commander to establish procedures for obtaining maintenance and funding support.

24.13.7. Refer training equipment maintenance problems beyond the capability of the TD, host-unit commander, and CLS contract through 373 TRS/TXFM to 82 MXS/LGML.

24.13.8. Ask for depot assistance, as required, according to TO 00-25-107, *Maintenance Assistance*, through the 82 MXS/LGML or training resource function.

24.13.9. By message, coordinate TD equipment cannibalization requests from non-982 TRG activities to satisfy host requirements with the 373 TRS/TXFM and 82 MXS/LGML. (TD commanders will not approve cannibalization of TD trainers.)

24.13.10. Ensure a listing of all line replaceable units, AGE, and TD test equipment is furnished to 373 TRS/TXFM personnel who will, when requested, provide a copy to the 82 MXS/LGML or training resource function for commodity TCTO management.

24.13.11. Designate, in writing, supervisory personnel authorized to sign DD Form 1577, **Unserviceable (Condemned) Tag Materiel**; DD Form 1574, **Serviceable Tag – Materiel**; DD Form 1577-2, **Unserviceable (Reparable) Tag – Materiel**; AF Form 979, **Danger Tag**; AF Form 980, **Caution Tag**; and AF Form 981, **Out of Order Tag**.

24.13.12. Ensure compliance with the local hazardous material management program.

24.14. Maintenance Management Program. The TD commander will designate instructors to monitor and ensure timely and effective maintenance is performed. Functional responsibilities may be assigned as multiple monitor duties if unit size warrants. In all cases, an alternate monitor should be assigned in all areas to ensure continuity. Maintenance functional responsibilities include technical data monitor, configuration management and modification monitor, trainer utilization and maintenance documentation monitor, equipment inspection scheduling monitor, QA, and instructors. (See paragraphs 24.15. through 24.20. for details of these responsibilities.)

24.15. Technical Data Monitor Responsibilities. This monitor will:

24.15.1. Establish a TO account according to TOs 00-5-1 and 00-5-2.

24.15.2. Coordinate with the host base QA or QC to establish requirements for inspecting TD TO files.

24.15.3. Review and manage AFTO Forms 22 according to TO 00-5-1 and this instruction. Forward AETC trainer-related forms through the TD QA monitor for review and to the 82 MXS/LGML for approval. Route all other forms through the host quality control or support function. For TOs maintained under a CLS contract, submit AFTO Forms 22 directly to the CLS project officer.

24.15.4. Review the numerical index and requirements tables to ensure currency of technical data.

24.15.5. Ensure control of locally developed checklists and workcards (**Chapter 4** and TO 00-5-1).

24.15.6. Furnish TCTOs on weapons systems to the TD QA for review.

24.15.7. Forward commodity TCTOs received to the TD QA for review. Maintain a copy of the TCTO until it is accomplished.

24.15.8. Ensure TD supervisors are notified of changes to WUC manuals, workcards, and checklists.

24.15.9. Maintain a record of reference and in-use code manuals, workcard decks, and checklists to monitor due dates of currency verification inspections.

24.15.10. Inventory TOs according to TOs 00-5-1 and 00-5-2.

24.16. Configuration Management and Modification Monitor Responsibilities. This monitor will:

24.16.1. Ensure cannibalization between TD-possessed trainers is properly documented, approved by the training manager, and coordinated with the 373 TRS/TXFM and 82 MXS/LGML.

24.16.2. Ensure TCTOs and modifications (**Chapter 9**) are accomplished as follows:

24.16.2.1. On notification from the documentation section (by DD Form 1348-1) that a TCTO kit was shipped from the documentation section, ensure the kit is not charged to the host base supply account. If the kit was not received within 30 days of the shipping date, notify the documentation section.

24.16.2.2. Ensure instructors personally inventory the contents of TCTO kits against the TCTO parts list. Handle shortages according to TO 00-5-15. On receipt of TCTO kits, notify the documentation section by message of any shortages in those kits and receipt of items to alleviate any shortages.

24.16.2.3. Coordinate with the host base for help completing the TCTO if accomplishment is beyond TD capability. Notify the 82 MXS/LGML and 82MSX/MAMD if assistance cannot be obtained.

24.16.2.4. Ensure TCTO accomplishment as soon as possible after receipt of the complete kit, parts, or tools. Refer to Table 2-1 of TO 00-5-15 to determine service removal dates. Send requests for deviation to the documentation section with a complete justification.

24.16.2.5. Ensure documentation of TCTO action (including work done by depot or contractor teams and kit proofings) are entered on the appropriate AFTO forms. Notify the documentation section, with an informational copy to the 82 MXS/LGML and 82MSX/MAMD by message or e-mail, of completed or partially completed TCTO actions. Ensure the message includes the TCTO number, status (partial or complete), and serial number of the training equipment or commodity item. If partial compliance is being reported, include the reason for the partial compliance, with an estimated date for completion. Report compliance status changes the same way. The documentation section will enter TCTO actions into the automated MMS.

24.16.3. Document compliance with command-directed modifications, using the above procedures (DoDI 5000.2, *Operation of the Defense Acquisition System*). Substitute the title of the command-directed modification for the TCTO number in the completion message.

24.17. Trainer Utilization and Maintenance Documentation Monitor Responsibilities. This monitor will:

24.17.1. Ensure a trainer inventory is accomplished and reported according to AFI 21-103.

24.17.2. Ensure trainer forms and records are maintained according to TOs 00-20-5 and 00-20-7.

24.17.3. Establish a trainer document file for each engine and item of training equipment on the master listing. Maintain this file with the training equipment, to include:

24.17.3.1. Active AFTO Forms 244 or 781-series, as applicable.

24.17.3.2. Serial number detail listing (AFCSM 21-568, Volume 2), when received from the 82 MXS/LGML documentation function.

24.17.3.3. Duplicate copies of AFTO Forms 349 (or automated products) and copies of messages or e-mails sent to the documentation section confirming TCTO compliance, until the updated history is received.

24.17.3.4. Automated history listing or duplicate AFTO Form 95 and other documents, as applicable.

- 24.17.3.5. Complete inventory listing to include all support equipment, recoverable components, and trainer baseline TOs.
- 24.17.4. Validate completed AFTO Forms 244 and 781-series, as applicable, for accuracy and completeness before forwarding them to the documentation section for filing.
- 24.17.5. Obtain a nonreporting work center code from the host production analysis activity.
- 24.17.6. Obtain a block of EIDs from the host plans and scheduling activity and ensure submitted AFTO Forms 350 include assigned EIDs.
- 24.17.7. Ensure maintenance actions are entered on AFTO Forms 244 as prescribed by TO 00-20-5.
- 24.17.8. Furnish a block of EIDs to the TD QA for use in documenting discrepancies found during inspections.

24.18. Equipment Inspection Scheduling Monitor Responsibilities. This monitor will:

- 24.18.1. Ensure inclusion of TD training equipment, SE, and TMDE requiring calendar inspection in equipment inspection scheduling program.
- 24.18.2. Create a master listing or database product of assigned equipment and required inspections, using one of the following:
 - 24.18.2.1. An automated MMS listing with ID numbers furnished by the host unit (AFCSM 21-564, Volume 2).
 - 24.18.2.2. An automated AGE scheduling program distributed and managed by the Air Force Logistics Management Agency, Gunter AFB AL.
 - 24.18.2.3. A local product for managing, scheduling, and tracking non-Category 1 training equipment preventive maintenance inspections.
- 24.18.3. Ensure one copy of the master listing or database product is reviewed, verified, and validated by the TD commander or chief. Ensure the listing is forwarded to the host agency within 5 days after creation or receipt.
- 24.18.4. Ensure TMDE items requiring calibrations are processed through the host base PMEL or TMDE branch. Use the applicable PMEL or TMDE branch product to manage, schedule, and track TMDE items.
- 24.18.5. Ensure calendar inspections or calibrations are performed. After completion, enter the next due date in red or update the listing.
- 24.18.6. Maintain a training equipment status control board or log (which may be automated) for all assigned AFI 21-103 reportable training equipment. Information must include a serial number, type, current supply status, ETIC, and remarks column. The TD commander will determine the status of other training equipment and SE to be displayed.

24.19. QA Responsibilities. The QA will: (*NOTE:* For more specific details on QA responsibilities, see [Chapter 4](#).)

- 24.19.1. Perform spotcheck QEs on trainers, mockups, and AGE items, ensuring (as a minimum) that each item is inspected at least annually. Inspection findings will be documented on either AF Form 2419 or AF Form 2420, **Quality Assurance Inspection Summary**. Document Red-X discrepancies

on AFTO Form 244, using EIDs as stated in paragraph 24.17. Route the appropriate evaluation documentation device through the TD commander (or designated representative).

24.19.2. Obtain a block of EIDs from the TD maintenance data collection monitor for use in documenting discrepancies discovered during QA QEs.

24.19.3. Help instructors perform transfer or acceptance inspections of training equipment (paragraph 24.20.).

24.19.4. Review TCTOs received with instructors to ensure required modifications to training equipment are included. If modifications are not included but are required, notify the documentation section. (Send information copies to the 82 MXS/LGML and 82MSX/MAMD.)

24.19.5. When required, submit trainer materiel deficiency reports through the host quality function (TO 00-35D-54). Send information copies to the 82 MXS/LGML and 373 TRS/TXFM.

24.19.6. When required, submit AFTO Forms 22 through the host quality function to the logistics support function for approval (paragraph 24.15.3.).

24.19.7. Inspect all trainer forms at least once each quarter to ensure accurate and effective documentation of maintenance actions. Bring errors to the attention of the responsible instructor. Annotate the inspection in the supervisory review block of the AFTO Form 244 for training equipment. Annotate inspections of GITAs on a separate AFTO Form 244 and insert the form in the AFTO Form 781-series maintenance forms folder for the applicable GITA.

24.19.8. Check completed AFTO Forms 244 and 781-series, as applicable, for accuracy and completeness before forwarding them to the documentation section.

24.20. Instructor Responsibilities. Instructors will assist in the performance of spotcheck QEs and perform maintenance within their capability. Additionally, they will:

24.20.1. Report all unsatisfactory equipment conditions through QA (TO 00-35D-54).

24.20.2. Submit modification proposals, as required, through the configuration management and modification monitor. No modification will be authorized unless approved by the owning command or the ALC having engineering and support responsibility for the affected equipment.

24.20.3. Document all maintenance on AFTO Form 349 or automated products according to TO 00-20-5.

24.20.4. Maintain current applicable equipment status forms as required by TO 00-20-5. Keep these forms on the training equipment.

24.20.5. Accomplish trainer equipment inventory reporting according to AFI 21-103.

24.21. TCTO Kit-Proofing. Accomplish TCTO kit-proofing at TDs as directed by HQ AETC. Coordinate through 82 MXS/LGML and 82 MSX/MAMD. In addition, identify required actions beyond the capability of the TD and host unit.

24.22. Movement of Training Equipment. When 82 MXS/LGML, 373 TRS/TXFM, 2 AF/DO, or HQ AETC/LGSWE directs movement of equipment, the applicable unit commanders will ensure the following actions are taken:

24.22.1. The losing unit will:

24.22.1.1. Perform a transfer inspection according to TOs 00-20-1 and 00-20-5 to include a power-on operational check of all powered trainers.

24.22.1.2. Completely inventory items, using the applicable trainer TO. Annotate shortages (to include support equipment) on trainer records and include the turn-in documents in the trainer documentation file.

24.22.1.3. Clean and condition-tag the equipment to be moved.

24.22.1.4. Include applicable trainer TOs, manuals, and trainer document files with the shipped equipment.

24.22.1.5. Ensure trainer covers and shipping containers are marked with proper identification and information as directed by the 82 MXS/LGML and 373 TRS/TXFM equipment monitors.

24.22.1.6. Inform the host chief of supply and transportation officer of the impending movement.

24.22.1.7. Delete the items of equipment from the master equipment ID listing and the equipment schedule at the end of the month of transfer.

24.22.1.8. Ensure the transfer of unaccomplished TCTO kits is according to TOs 00-5-15 and 00-20-1.

24.22.1.9. Initiate a loss message in accordance with AFI 21-103 within 48 hours after turning equipment over to host agencies for shipment.

24.22.1.10. Notify the 82 MXS/LGML and 373 TRS/TXFM of all movements.

24.22.2. The gaining unit will:

24.22.2.1. Perform an acceptance inspection in accordance with TOs 00-20-1 and 00-20-5 to include a power-on operational check of all powered trainers.

24.22.2.2. Perform a complete inventory of items received, using applicable trainer TOs and the trainer documentation file. Report shortages to the 82 MXS/LGML and 373 TRS/TXFM for followup action, as necessary.

24.22.2.3. Notify the host chief of supply of received equipment.

24.22.2.4. Add received equipment to the master equipment ID listing and MDS equipment schedule through the host base, using IDs number provided by the training resource function equipment monitor.

24.22.2.5. Initiate a gain message according to AFI 21-103 within 48 hours after receiving equipment. Notify the 82 MXS/LGML and 373 TRS/TXFM of all movements.

24.23. Forms Prescribed. AETC Forms 55, 138, 199, 229, 246, 403, 453, 520, 523, 666, 1042, 1158, and 1236.

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Deputy Director of Logistics

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

OMB Circular A-76, *Performance of Commercial Activities*

DoDI 5000.2, *Operation of the Defense Acquisition System*

AFMAN 10-206, *Operational Reporting*

AFI 11-202, Volume 3, *General Flight Rules*

AFI 11-218, *Aircraft Operation and Movement on the Ground*

AFI 11-401, *Flight Management*

AFI 16-402, *Aerospace Vehicle Programming, Assignment, Distribution, Accounting, and Termination*

AFPD 21-1, *Managing Aerospace Equipment Maintenance*

AFPD 21-3, *Technical Orders*

AFI 21-101, *Maintenance Management of Aircraft*

AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*

AFI 21-104, *Selective Management of Selected Gas Turbine Engines*

AFI 21-105, *Aerospace Equipment Structural Maintenance*

AFI 21-112, *Aircraft Egress Systems Maintenance*

AFI 21-118, *Improving Aerospace Equipment Reliability and Maintainability*

AFI 21-123, *Air Force Gold Program*

AFI 21-201, *Management and Maintenance of Non-Nuclear Munitions*

AFMAN 23-110, Volume 2, Part 2, *USAF Standard Base Supply System*

AFMAN 23-110, Volume 2, Part 13, *Standard Base Supply Customer's Procedures*

AFMAN 23-110, Volume 6, *Excess and Surplus Personal Property*

AFI 23-111, *Management of Government Property in Possession of the Air Force*

AFI 23-202, *Buying Petroleum Products, and Other Supplies and Services Off-Station*

AFI 24-302, *Vehicle Maintenance Management*

AFJMAN 24-306, *Manual for the Wheeled Vehicle Driver*

AFI 25-201, *Support Agreements Procedures*

AFI 31-101, *The Air Force Installation Security Program (FOUO)*

AFI 31-401, *Information Security Program Management*

AFI 32-1024, *Standard Facility Requirements*

AFI 32-1063, *Electric Power Systems*

AFMAN 32-1094, *Criteria for Air Force Precision Measurement Equipment Laboratory Design and Construction*

AFI 32-4002, *Hazardous Material Emergency Planning and Response Program*

AFI 32-7042, *Solid and Hazardous Waste Compliance*

AFI 32-7080, *Pollution Prevention Program*

AFI 32-7086, *Hazardous Materials Management*

AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections*

AFI 33-360, Volume 2, *Forms Management Program*

AFI 36-2201, *Developing, Managing, and Conducting Training*

AFI 36-2217, *Munitions Requirements for Aircrew Training*

AFI 36-2606, *Reenlistment in the United States Air Force*

AFMAN 37-123, *Management of Records*

AFMAN 37-139, *Records Disposition Schedule*

AFI 38-101, *Air Force Organization*

AFI 38-203, *Commercial Activities Program*

AFI 38-401, *The Air Force Innovative Development Through Employee Awareness (IDEA) Program*

AFI 48-125, *The US Air Force Personnel Dosimetry Program*

AFI 63-801, *Value Engineering Program*

AFI 63-1001, *Aircraft Structural Integrity Program*

AFI 63-1101, *Modification Management*

AFI 65-601, Volume 1, *Budget Guidance and Procedures*

AFI 84-103, *Museum System*

AFI 91-201, *Explosive Safety Standards*

AFI 91-202, *The US Air Force Mishap Prevention Program*

AFI 91-204, *Safety Investigations and Reports*

AFI 99-101, *Developmental Test and Evaluation*

AFI 99-102, *Operational Test and Evaluation*

AFI 99-109, *Test Resource Planning*

AFCSM 21-303, Volume 2, *Precision Measurement Equipment Laboratory (PMEL) Automated Management System (PAMS)*

AFCSM 21-556, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS (PA), Introduction to CAMS, Users Manual*

AFCSM 21-559, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Automatic Test Equipment Reporting System (ATERS), Users Manual*

AFCSM 21-563, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Time Compliance Technical Order (TCTO), Users Manual*

AFCSM 21-564, Volume 2, *Core Automated Maintenance System (CAMS) DSD:G054/FS, Users Manual*

AFCSM 21-568, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Users Manual*

AFCSM 21-570, Volume 2, *Core Automated Maintenance System (CAMS), Training Management, Users Manual*

AFCSM 21-571, Volume 2, *Core Automated Maintenance System (CAMS), Users Manual*

AFCSM 21-579, Volume 2, *Core Automated Maintenance System (CAMS) DSD: G054/FS, Maintenance-Supply Interface, Users Manual*

AETCI 14-101, *Air Education and Training Command Intelligence Functions and Responsibilities*

AETCI 21-103, *Maintenance Training, Qualification, and Certification Programs*

AETCI 21-104, *Aircraft Planning and Scheduling*

AETCI 21-105, *Logistics Quality Performance Measures Reporting Procedures*

AETCI 21-106, *Corrosion Control*

AETCI 21-109, *Maintenance Management--Trainer Development*

AETCI 21-111, *Gold Way Program*

AETCI 36-2201, *Training Evaluation*

AFOOSH Standard 91-46, *Materials Handling and Storage Equipment*

AFOOSH Standard 91-66, *General Industrial Operations*

AFOOSH Standard 91-100, *Aircraft Flight Line - Ground Operations and Activities*

AFOOSH Standard 161-21, *Hazard Communication*

NAS 410, *NAS Certification and Qualification of Nondestructive Test Personnel*

TO 00-5-1, *Air Force Technical Order System*

TO 00-5-2, *Technical Order Distribution System*

TO 00-5-15, *Air Force Time Compliance Technical Order System*

TO 00-20-1, *Aerospace Equipment Maintenance General Policies and Procedures*

TO 00-20-2, *Maintenance Data Documentation*

TO 00-20-3, *Maintenance Processing of Reparable Property and Repair Cycle Asset Control System*

TO 00-20-5, *Aerospace Vehicle/Equipment Inspection and Documentation*

TO 00-20-9, *Forecasting Replacement Requirements for Selected Calendar and Hourly Time Change Items*

TO 00-20-14, *AF Metrology and Calibration Program*

TO 00-25-4, *Depot Maintenance of Aerospace Vehicles and Training Equipment*

TO 00-25-107, *Maintenance Assistance*

TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*

TO 00-25-195, *Air Force Technical Order System Source, Maintenance and Recoverability Coding of Air Force Weapons, Systems, and Equipment*

TO 00-25-240, *Uniform Repair/Replacement Criteria for Selected USAF Support Equipment (SE)*

TO 00-25-252, *Intermediate Maintenance and Depot Level Maintenance Instructions, Aeronautical Equipment Welding (NAVAIR 01-1A-34 and T.C. 9-238)*

TO 00-25-257, *Engine Trending and Diagnostics, Users Manual*

TO 00-35D-54, *USAF Material Deficiency Reporting System*

TO 00-85-20, *Engine Shipping Instructions*

TO 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*

TO 1-1-300, *Acceptance/Functional Check Flight and Maintenance Operations Checks*

TO 1-1-691, *Aircraft Weapons Systems Cleaning and Corrosion Control*

TO 1-1B-50, *Basic Technical Order for USAF Aircraft Weight and Balance*

TO 2J-J1-18, *Preparation for Shipment and Storage of Gas Turbine Engines*

TO 11A-1-33, *Handling and Maintenance of Explosives Loaded Aircraft*

TO 14D3-11-1, *Operations, Inspection, Maintenance, and Packing Instructions for Emergency Personnel Recovery PEXHR (Chest, Back, Seat Style, and Torso Harness) W/IPB – (ATOS)*

TO 33-1-27, *Logistic Support of Precision Measurement Equipment*

TO 33-1-37, *Joint Oil Analysis Program Laboratory Manual*

TO 33-1-37-1, *Joint Oil Analysis Program Laboratory Manual, Volume I, NSN 0817-LP-305-8000*

TO 33B-1-1, *Non-Destructive Inspection Methods*

TO 33K-1-100, *TMDE Calibration Notes Maintenance Data Collection Codes, Calibration Measurement Summaries, Calibration Procedures, Calibration Interval and Work Unit Code Reference Manual*

TO 34-1-3, *Inspection and Maintenance—Machinery and Shop Equipment*

TO 35-1-3, *Corrosion Prevention, Painting and Marking of USAF Support Equipment (SE)*

TO 35-1-4, *Processing and Inspection of Support Equipment for Storage and Shipment*

TO 35-1-24, *General Instructions – Air Force Economic Repair/Replacement Criteria for Selected San Antonio ALC Managed Support Equipment (SE)*

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TO 35-1-26, *General Instructions – Air Force Economic Repair/Replacement Criteria for Selected SM/ALC Managed Support Equipment (SE) FSG6100*

TO 35-1-246WC-1, *Non-Powered Aerospace Ground Equipment Aircraft Servicing Equipment (FSC 1730) and Airfield Specialized Trucks and Trailers (FSC 1740)*

TO 35D6-1-106, *Periodic and Maintenance Instr—Aircraft and Engine Slings (General) and Restraining Devices*

Abbreviations and Acronyms

ACES II—Advanced Concept Ejection System II

ACM—aircraft configuration management

ACO—administrative contracting officer

ADS—automated data system

AFCSM—Air Force computer system manual

AFI—Air Force instruction

AFJMAN—Air Force joint manual

AFMAN—Air Force manual

AFMC—Air Force Contract Materiel Command

AFMETCAL—Air Force Metrology and Calibration (Program)

AFOSH—Air Force occupational safety and health

AFPD—Air Force policy directive

AFSC—Air Force specialty code

AGETS—Automated Ground Engine Test System

AGMC—Aerospace Guidance and Metrology Center

AGM—air-to-ground missile

ALC—air logistics center

AME—alternate mission equipment

AGE—aerospace ground equipment

AR—aero repair

AS—allowance standard

ASAP—as soon as possible

ASIP—aircraft structural integrity program

ATE—automated test equipment

ATS—aircraft turn supervisor

AUC—authorization utilization code

AVDO—aerospace vehicle distribution officer

AVTR—airborne video tape recorder

AWD—awaiting depot
AWM—awaiting maintenance
AWP—awaiting parts
BCT—bomber combat turnaroud
BEM—base engine manager
BPO—basic postflight inspection
BRU—bomb rack unit
BSSE—bench stock support element
CA—cannibalization authority
CAD/PAD—cartridge-activated device/propellant-actuated device
CAMS—Core Automated Maintenance System
CAMSFM—CAMS for mobility (G081)
CASS—Centralized Aircraft Support System
CAST—combat armament support team
CAT—combat AGE team
CATM—captive aircraft training missile
CCR—circuit card repair
CDB—central database
C-E—communications-electronics
CE—civil engineering
CEMS—Comprehensive Engine Management System
CFL—competent familiarity loading
CFT—contract field team
CFRS—Computerized Fault Reporting System
CL—checklist
CLS—contractor logistic support
CM—certified mechanic
CMM—certified master mechanic
CMS—calibration and measurement summary
CND—cannot duplicate
COMBS—Contractor Operated and Maintained Base Supply (*System*)
CR—contractor regulation

CSRD—communication-computer systems requirements
CT—combat turn around
CTA—combat turn area
CTD—combat turn director
CTO—combat turn operations
CTK—consolidated tool kit
DBM—database management
DIFM—due in from maintenance
DIREP—difficulty report
DIT—data integrity team
DLO—dual load operations
DOC—dueout cancellation
DOGM—deputy operations group commander for maintenance
DOI—date of installation
DOM—director of maintenance, date of manufacture
DOP—dropped object prevention
DOR—dueout release
DRL—depot-level reparable
ECM—electronic countermeasures
EHR—engine history recorder
EIAP—environmental impact analysis process
EID—event identification number
ELT—equipment listing
EM—engine management
EMB—engine management branch
ENMCS—engine not mission capable supply
ENSIP—Engine Structural Integrity Program
ER—exceptional release
ERRC—expendability, recoverability, repairability category; engine regional repair center
ESS—electrical standard set
ET&D—engine treading diagnostic
ETIC—estimated time in commission

ETTAS—Engine Test and Trim Automated System
EWO—emergency war order
EWS—electronic warfare system
FAA—Federal Aviation Administration
FAD—force activity designator
FAST—forward asset support training
FASTCAL—field assistance support team for calibration
FCF—functional check flight
FCT—flight circuit test
FO—foreign object
FOD—foreign object damage
FOL—forward operating location
FS—fighter squadron
FSC—federal stock class
FTD—flying training detachment
GAS—graduate assessment survey
GENRUN—generated run
GITA—ground instructional training aircraft
GPS—global position system
GTE—gas turbine engine
HF—high frequency
HPO—hourly postflight
HSC—home station check
I&SG—interchangeable and substitute group
ICT—integrated combat turnaround
ID—identification
IDEA—innovative development through employee awareness
IFE—in-flight emergency
IFF—identification friend or foe
IFR—in-flight refueling
IGV—inlet guide vane
ILS—instrument landing system

IMPAC—international merchant purchasing authorization card
INS—inertial navigation system
IOS—interim operational supplement
IPDA—IDEA program data system
IPI—in-process inspection
IPL—immediately prior to launch
IREP—intermediate repair enhancement program
ISO—isochronal
JCN—job control number
JDD—job data documentation
JEIM—jet engine intermediate maintenance
JETCC—jet engine test cell calibrator
JML—job master listing
JST—job standard
LANTIRN—low altitude navigation and targeting infrared systems for night
LG—logistics group
LM—limited use munition
LMME—locally manufactured munitions equipment
LRU—line replaceable unit
LSC—loading standardization crew
LSS—logistic support squadron
LTF—logistics training flight
MA—maintenance authority (*in contract maintenance activities*)
MADARS—malfunction, detection, analysis, and recording subsystem
MAQ—maximum authorized quantity
MASO—munitions accountable systems officer
MC—mission capable
MDC—maintenance data collection
MDS—mission design series
MEO—most efficient organization
MESL—mission essential subsystem list
MFG—munitions family group

MICAP—mission capability
MLIR—Monthly Logistics Indicator Report
MMHE—munitions material handling equipment
MMS—maintenance management system
MOC—maintenance operations center
MOI—maintenance operating instruction
MPC—mission planning cell
MPRL—minimum proficiency requirement loading
MRA—minimum reserve authorization
MS—maintenance superintendent
MSA—munitions storage area
MSD—material support division
MSL—maintenance supply liaison
MTT—mobile training team
NAF—numbered Air Force
NAS—national aerospace standard
NDI—nondestructive inspection
NF—nonexpendable equipment items
NIE—normally installed equipment
NMC—not mission capable
NMCS—not mission capable supply
NRTS—not repairable this station
NSN—national stock number
O&M—operation and maintenance
OAP—oil analysis program
OC-ALC—Oklahoma City Air Logistics Center
OCF—operational check flight
OFP—operational flight plan
OG—operations group
OJT—on-the-job training
OMB—Office of Management and Budget
OND—operations nondelivery

ORI—operational readiness inspection
OSS—operation support squadron
OTI—one-time inspection
OTU—operating time update
OWC—owning work center
P&S—plans and scheduling
PA—programmed allocation (*the official flying hour allocation document*)
PAFSC—primary Air Force specialty code
PAMS—PMEL automated management subsystem
PATEC—portable automatic test equipment calibrator
PCA—permanent change of assignment
PCEMS—process control equipment maintenance scheduling (*program*)
PCS—permanent change of station
PDM—programmed depot maintenance
PE—periodic maintenance
PGM—precision guided munitions
PIM—product improvement manager
PIP—product improvement program
PIT—pilot instructor training
PIWG—product improvement working group
PM—primary munition
PMB—plastic media blast
PMCS—partial mission capable supply
PMEL—precision measurement equipment laboratory
PMRP—precious metals recovery program
POC—point of contact
POL—petroleum, oil, and lubricants
PPE—personal protective equipment
PPIC—possession purpose identifier code
PQDR—product quality deficiency report
PRA—planning requirement
PS&D—plans, scheduling, and documentation

PWS—performance work statement

QA—quality assurance

QAE—quality assurance evaluator

QAP—quality assurance program

QC—quality control

QE—quality evaluation

QEC—quick engine change

QLP—query language processing

QPE—quality process evaluation

QPL—quality products list

QRL—quick reference list

R&M—reliability and maintainability

RAM—reparable asset manager

RCAMS—repair cycle asset management system

RCM—repair cycle monitor

RCSS—repair cycle support section

REMIS—Reliability and Maintainability Information System

RFP—request for proposal

RPC—regional processing center

RWR—radar warning receiver

SAN—system advisory notice

SAS—stability augmentation system

SBSS—Standard Base Supply System

SCL—standard configuration load

SCR—special certification roster

SE—support equipment

SLC—squadron lead crew

SM—support munitions

SMO—squadron maintenance officer

SNCO—senior noncommissioned officer

SOW—statement of work

SPRAM—special purpose recoverable authorized maintenance

SRD—standard reporting designator
SRU—shop replaceable unit
SSEA—systems safety engineering analysis
SUPT—specialized undergraduate pilot training
TACAN—tactical air navigation
TAL—task assignment list
TCAS—traffic collision avoidance system
TCI—time change item
TCTO—time compliance technical order
TD—training detachment
TDI—time distribution inspection
TDY—temporary duty
TEMS—Turbine Engine Management System
TER—triple ejector rack
TEX—transaction exception
TFCU—transportable field calibration unit
TMDE—test, measurement, and diagnostic equipment
TMSM—type, model, and series modification
TNB—tail number bin
TO—technical order
TODO—technical order distribution office
TQP—total quality program
TRCO—technical representative for the contracting officer
TRE—transfer report
TRG—training group
TRIC—transaction identification code
TRN—maintenance turnaround
TRW—training wing
UCML—unit-committed munitions list
UEM—unit engine manager
UGT—upgrade training
UHF—ultra high frequency

UJC—urgency justification code
UL—underwriters laboratory
UMD—unit manning document
UMMIPS—Uniform Material Movement and Issue Priority System
UND—urgency of need designator
UNT—undergraduate navigator training
UPMR—unit personnel management roster
UPT—undergraduate pilot training
UTE—utilization
VCO—vehicle control officer
VHF—very high frequency
W&B—weight and balance
WCE—work center event
WLCMP—weapons load crew management program
WM—war management
WRM—war reserve material
WS—weapons standardization
WUC—work unit code
2LM—two-level maintenance

Terms

Aircraft Impoundment—The isolation of an aircraft due to an unknown malfunction or condition.

Automated Maintenance Management (MMS)—A generic term used in reference to Core Automated Maintenance System (CAMS); Reliability and Maintainability Information System (REMIS); Precision Measurement Equipment Laboratory (PMEL) Automated Management System (PAMS); CAMS for Airlift (G081); and Comprehensive Engine Management System (CEMS).

Bench Stocks—Stores of expendability, recoverability, repairability coded (ERRC) XB3 items kept on hand in a work center to enhance maintenance productivity.

Cannibalization—The authorized removals of a specific assembly, subassembly, or part from a weapon system, system, support system, or equipment end item for installation on another end item to meet priority mission requirements with an obligation to replace the removed item.

Debriefing—An aggressive aircrew and maintenance program designed to ensure that malfunctions identified by aircrews are properly reported and documented.

Element—The lowest division of responsibilities within a flight. The element, if used, is subordinate to a section.

Flight—The subdivision of a squadron. If internal subdivision of a flight is required, a flight may be divided into sections and then into elements.

In-Process Inspection (IPI)—An inspection performed during the assembly or reassembly of systems, subsystems, or components with applicable technical orders TOs.

Intermediate-Level Maintenance—Maintenance consisting of those off-equipment tasks normally performed, using the resources of the operating command at an operating location or a centralized intermediate repair facility.

Lead Crews—A load crew certified by the load standardization crew (LSC) that is assigned to weapons standardization (WS) to assist in conducting the WS.

Off-Equipment Maintenance—Those maintenance tasks that are not or cannot be effectively accomplished on or at the weapon system or end-item of equipment, but require the removal of the component to a shop or facility for repair.

On-Equipment Maintenance—Those maintenance tasks that are or can be effectively performed on or at the weapon system or end-item of equipment.

Recurring Discrepancy—A similar discrepancy that occurs two or more times within five consecutive sorties. If a system or subsystem malfunction reappears during the third, fourth, or fifth sortie (or attempted sortie) following its first appearance (considered the first sortie), the malfunction is a recurring discrepancy.

Repeat Discrepancy—A similar discrepancy on the same subsystem or component that occurs on two consecutive sorties.

Section—The first subdivision of a flight. If further subdivision is required, the section may be divided into elements.

Shop Support Stock—Includes items such as sheet metal, electrical wire, fabric, and metal stock, which are used and stored within a maintenance function to facilitate maintenance.

Special Certification Roster (SCR)—A management tool that provides supervisors a listing of personnel authorized to perform, evaluate, and/or inspect critical work.

Training Equipment—Equipment within AETC designed to facilitate training and be used for instructional purposes, to include GITA. Training equipment does not include aircrew training devices.

Attachment 2

REPORTING OF J69 AND J85 ENGINE GROUND OR IN-FLIGHT STALL AND FLAMEOUT

A2.1. Reporting Procedures. Submit final investigation results through 19AF/LGM to HQ AETC/LGMTP. Ensure the investigation results are submitted on release of the engine back to flight status. Also ensure the results include the following information:

- A2.1.1. Aircraft and engine serial number.
- A2.1.2. Date of incident and what sortie of the day the stall or flameout occurred.
- A2.1.3. Whether incident occurred on the ground or in flight.
- A2.1.4. The pilot-reported discrepancy.
- A2.1.5. Whether the incident was a repeat or recur.
- A2.1.6. All corrective actions taken.
- A2.1.7. The action that corrected the problem.
- A2.1.8. Whether a product quality deficiency report (PQDR) was submitted on the failed part. If so, provide the PQDR report control number.

A2.2. Maintenance Requirements on Reported Compressor Stall or Flameout Conditions:

- A2.2.1. If a flameout or compressor stall incident occurs on *one* engine, determine the cause. If the cause cannot be determined and the engine does not have previous stall or flameout history, perform an FCF. **NOTE:** If a flameout occurs on engine start, an FCF is not required.
- A2.2.2. If a flameout or compressor stall incident occurs on *both* engines, determine the cause on both. If the cause cannot be determined on one or both engines, replace at least one of the engines with a known serviceable engine and perform an FCF.